The Executive's Guide to Mastering the Web in Business

WEBMASTER

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February 1997

New England Power Co. Manager of Information Services Jeff Geltz

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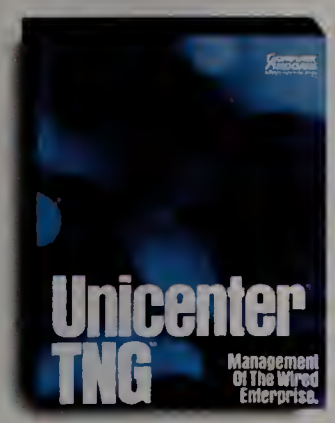

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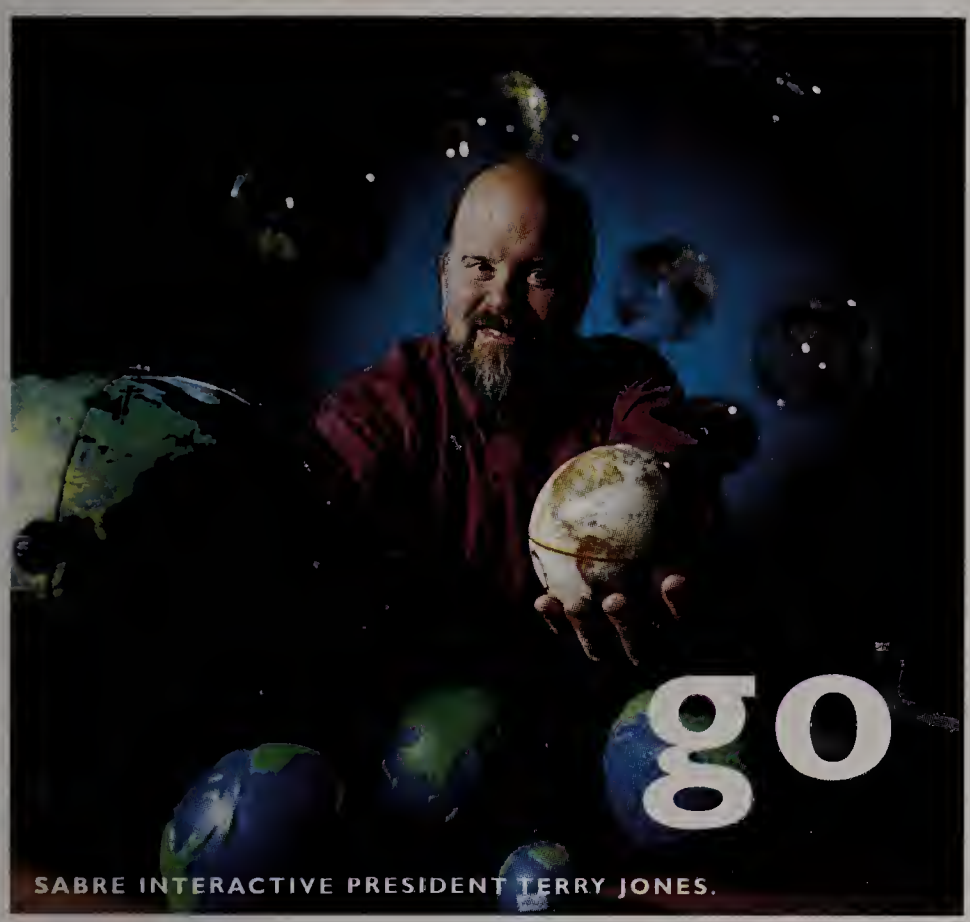
Cover image by John Soares

Now Playing

30 Days and Counting: Companies have less than a month to submit applications for *WebMaster* magazine's WebMaster 50/50 awards program, which will recognize 50 outstanding Internet and 50 outstanding intranet initiatives. Winners will be honored in the August 1997 issue of *WebMaster*. The deadline for entry forms, which can be found online at *www.web-master.com/50/50*, is Friday, March 14, 1997. For more information, contact Lisa Kerber at *kerber@cio.com*.



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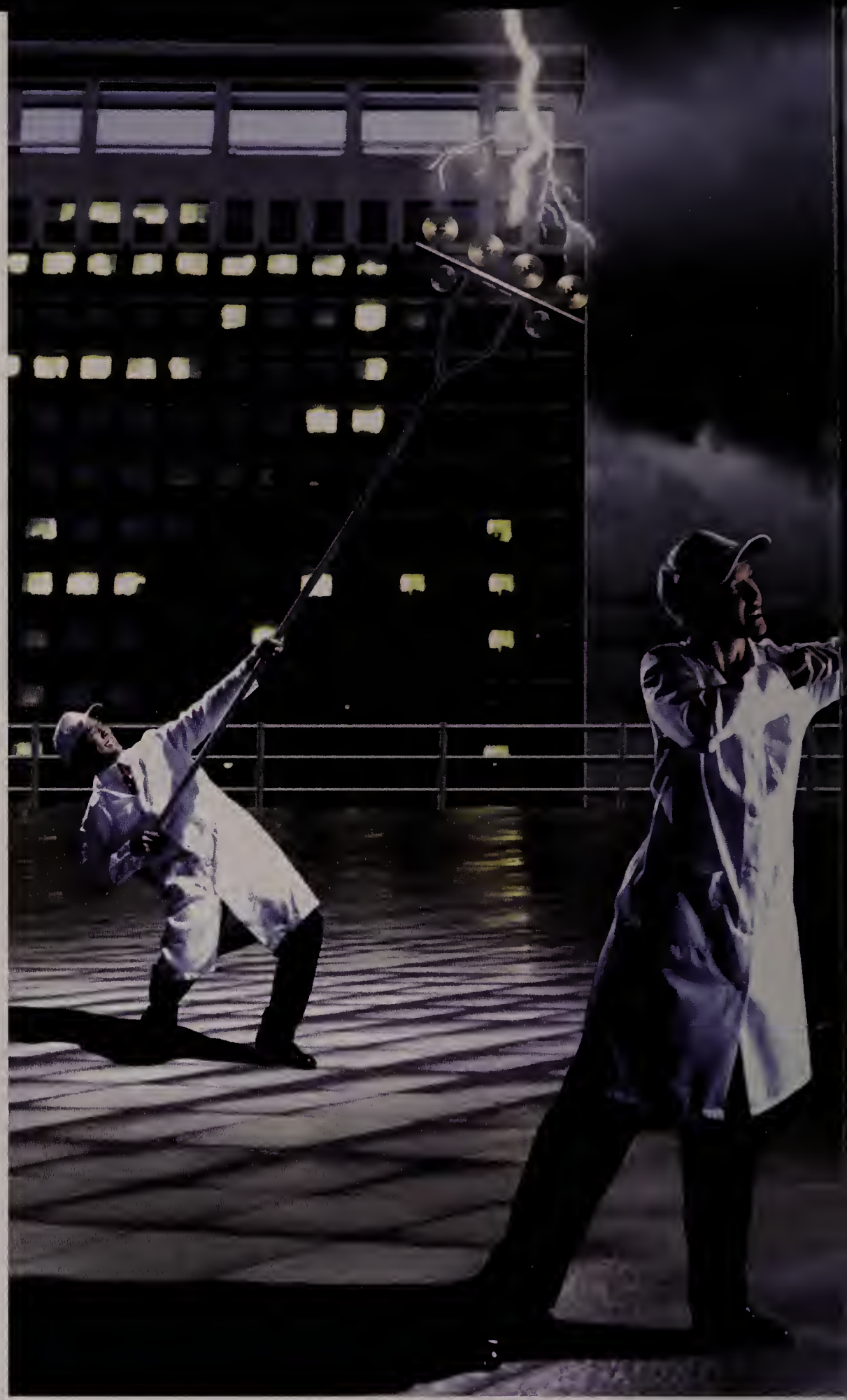

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▼ Every webmaster knows that nothing is more important than content. Except what you do with content.
By Matthew Cutler

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Community Service

It's hard to think of a concept less objectionable than community. While "values" has been hijacked by politicians, and "family" is frequently modified by "broken" or "dysfunctional," "community" still conjures up images of shared experience and mutual support. Think Hillary Clinton's child-rearing village. Think Amish-garbed actors pretending to raise a barn in *Witness*.

Community is very, very big on the Web, which is itself a sort of barn being raised collectively by site developers around the world. Many Web communities come together around subjects their members feel passionate about (Should the federal government be empowered to read encrypted messages? Will *The X-Files'* Scully and Mulder ever get it on?). But others exist to support people in their daily lives, such as professional communities that offer practical advice and networking opportunities for doctors and lawyers, meteorologists and pastry chefs. On the Web, English professors can find help locating an obscure F. Scott Fitzgerald quotation, AIDS researchers can share best practices in the use of protease inhibitors, and systems specialists can exchange war stories about the little vendor that couldn't.

Web-based communities, then, would appear to be an incomparable resource for learning and professional development. Funny thing, though: Not everybody sees them that way.

Every year, CIO Communications' editorial group (which produces both *WebMaster* and *CIO* magazines) holds an off-site meeting, at which we assemble panels of readers whose brains we assiduously pick. At the most recent retreat, our first four victims were IS executives—intelligent, articulate folk who work hard and take their jobs seriously. When we asked them how they used the Web—what discussion groups they participated in, what professional resources they found most useful and what kinds of peer-to-peer interaction they would like to see—their answers were essentially zero, zip and not my cup of tea. Rather apologetically—perhaps because they knew it wasn't what we wanted to hear—these people told us that they ventured onto the Web only when seeking very specific information from very specific sources. And even then, like anxious commandos they tried to get in, do the job quickly and get out.

Their reasons were understandable. Like many business types with deadlines and deliverables, they feared that the Web's siren call would shipwreck their productivity. They were doubtful of the quality of the information they would get—how forthcoming or reliable the other members of an online forum would be. And they worried that their own candor would bring down on their heads the wrath of superiors or

the unwanted attentions of vendors. "It's a formal, written, staring-you-in-the-face kind of medium," explained one panelist. "There are limits to how much people are going to be willing to tell."

The next day we heard a very different story from a second panel, which consisted of Electric Minds founder and cyberpundit Howard Rheingold; Boston.com lead content developer Scott Kirsner; Tripod Inc. CEO Bo Peabody; and Tripod director of membership services Tung Pham. They explained how online communities can topple the physical barriers separating like-minded people and create a kind

PHOTOGRAPH BY JOHN SOARES

www.web-master.com/

of petri dish for the cultivation of ideas and innovation. In their common vision, collaboration, networking, brainstorming and constructive debate—all those things that are supposed to advance the state of humankind and, yes, business—would occur perpetually, rather than occasionally at a conference or seminar. Participants would be exposed to eye-opening experiences outside their organizations, and the conversation would be constantly revitalized as new blood and fresh perspectives cycled in.

Granted, none of those men is an impartial observer. (For information about their endeavors, see "Social Studies," Page 44.) But the fact that all have staked some portion of their careers on the quest for community attests to their fervent belief in the concept. And if their visions pan out, businesses may find themselves moving closer to the "learning organization" ideal, as thousands of individual learning organisms take what they have discovered in virtual communities and roll it back into their workplace communities.

But Web communities will never become high-quality meat if potential users see them as poison. Believers hope the twin forces of experience and education will convince many doubters of the medium's value. Still, creators of online communities must be sensitive to the justifiable suspicions of people like our first group of panelists, and they would be wise to take steps to address those concerns. They must, for example, be able to ensure participants' anonymity or at least a reasonable degree of protection from vendors, spies and other lurkers. They must make discussion threads and small affinity groups easy to locate, and keep the discourse civil, productive and on target. And when someone does come in with a question that needs immediate attention, they should move heaven and earth to get that question answered. After all, every one of us sometimes needs simply to get in, do the job quickly and get out.

Leigh Buchanan

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WEBMASTER

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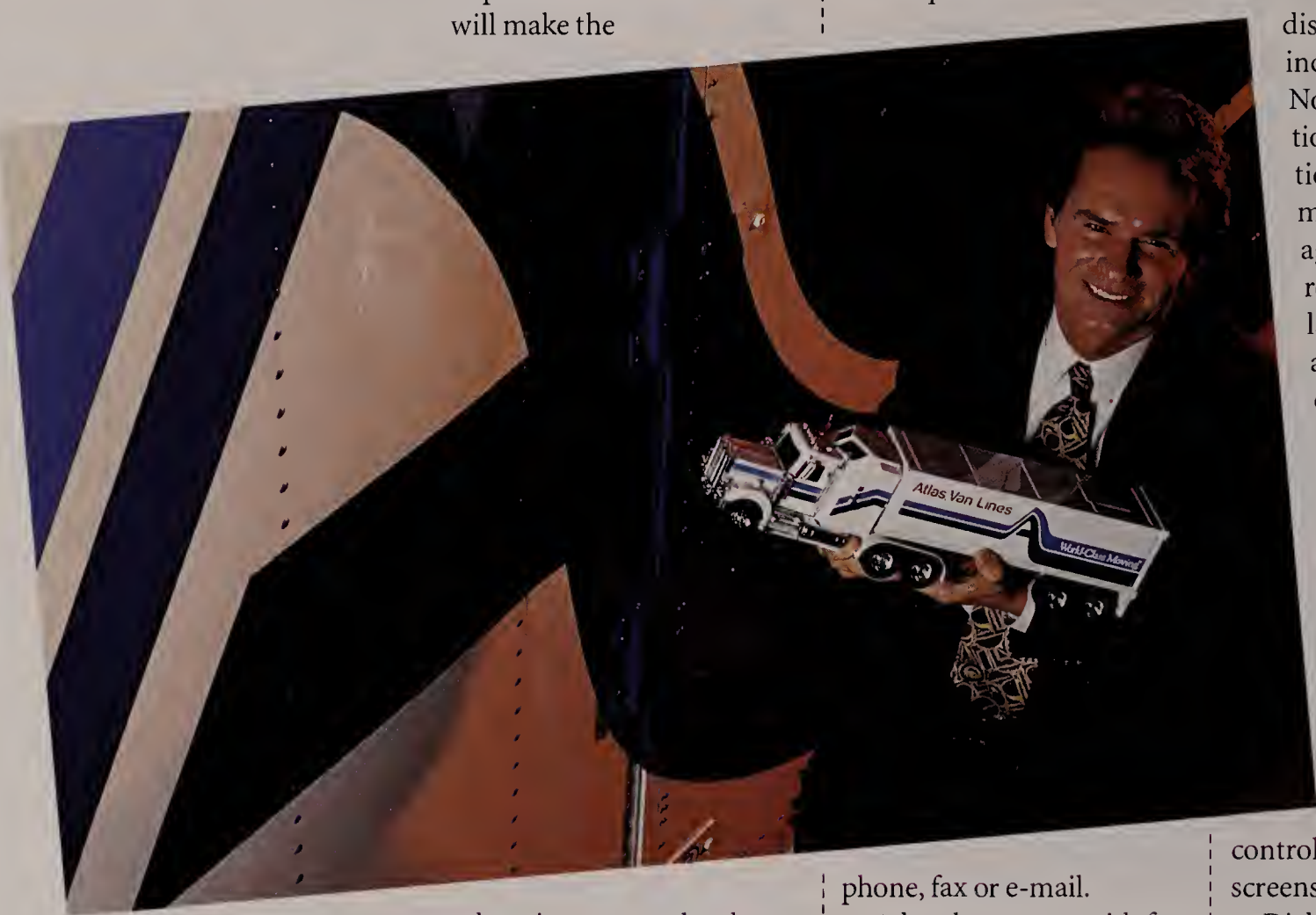
PROFILE

A Deeply Moving Web Site

MOVING IS LIKE surgery—anything providers can do to make it less painful is greatly appreciated.

Atlas Van Lines Inc. (*www.atlasvanlines.com*), a $400 million mover of household and high-value goods, hopes Web-based services will make the relocation process less harrowing. In conjunction with site developer World Connection Services (*www.evansville.net/wcs/*), the company is fielding a combination Web-fax application that customers can use to get estimates of the cost of a move. Users enter pertinent data—origin address, destination address and date of move—into a form and using pull-down menus add information about the size and number of rooms. The program reads the customer's ZIP code and queries a database for the closest Atlas agent; it then converts the information into a TIF file and faxes it to that agent, who responds with a quote via phone, fax or e-mail.



THE WHEEL THING: Atlas Van Lines' interactive calendar, says Jim Huth, helps customers plan each stage of their moves.

Atlas chose to go with fax rather than e-mail because "it's the lowest common denominator," says Jim Huth, Atlas's director of corporate communications. Atlas is also working on an interactive calendar to help customers plan for their ordeals. Users enter their moving dates and get back "a schedule that you can print and hang on your refrigerator that says, 'Four weeks before you move, call the doctor and get your prescriptions transferred' and things like that—a detailed countdown," says Huth.

Meanwhile, corporate IS is "webifying" Atlas's information systems, which handle everything from driver assignments to revenue distribution for 600 independent agents in North America. Traditionally, that information has lived on a mainframe, which agents accessed via remote terminal emulation. But two years ago, IS began developing in client/server, and Atlas started looking to the Web browser as a universal client.

The company is using Salvo from Simware Inc. (*www.simware.com*) to translate about 300 customer information control system (CICS) screens for the Web.

Dick Arneson, vice president of management information services, says the real benefit of the Web is that it allows agents to choose their methods of communication—be it through a LAN, leased lines or the Internet. "The mechanism can be picked based on real requirements and costs," says Arneson. "But with the Web, the interface and operation are identical."

–Leigh Buchanan

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DISCOURAGED by the commercialization of the Web and the traffic caused by the thousands of seventh graders who got Netscape 3.0 for Christmas, academics and researchers want the Internet to return to what it once was: theirs.

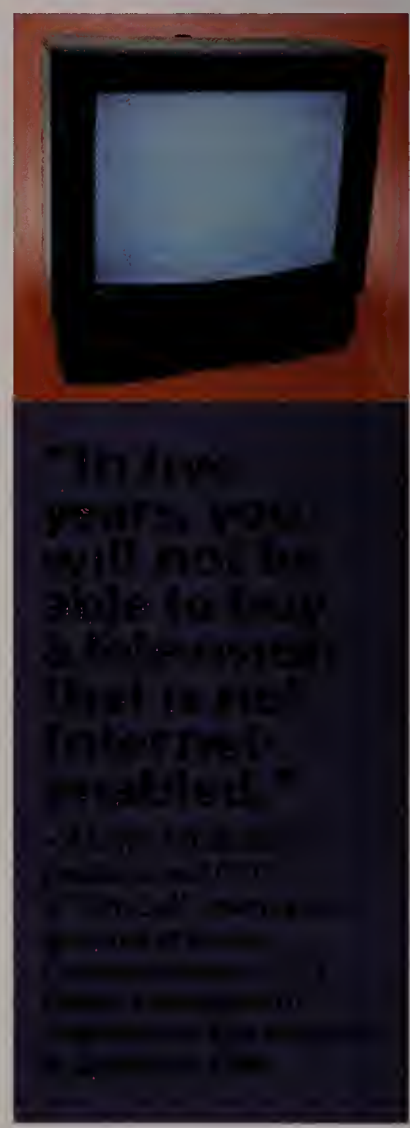
One major force pushing for a new network is Internet II, an organization representing about 100 universities and computer and telecommunications companies that conduct much government research. Another is the National Science Foundation, whose Very high-speed Backbone Network Service (VBNS), a 622Mbps pipeline, will become the highway for the researchers' information. A third is President Clinton, who has pledged support for something called the Next Generation Internet, a $500 million expansion of VBNS that will link the members of the Internet II group.

Whatever it is eventually called, the network promises multimedia and videoconferencing capabilities far beyond those demonstrated on today's Internet.

"We're talking a quantum leap in capabilities," says Mark Luker, NSF Net program director. From Luker's perspective, everyone involved wants the same thing: a very high-speed pipeline that keeps the country's very high-speed scientific minds connected.

There may be some debate, however, over who picks up the check. Most of the $500 million price tag is still vaporbudget. It's up to Congress to get it to beta.

NEXT YEAR'S MODEL: NSF Net Program Director Mark Luker sees a 622Mbps pipeline that will keep scientists connected to the cutting edge.



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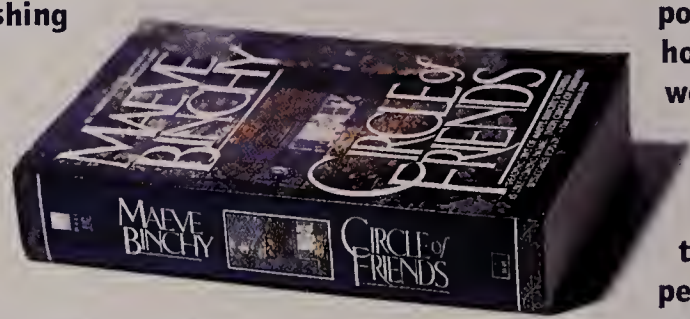
Making Book

Laura Fillmore, president and CEO of Open Book Systems Ltd. (*www.obs-us.com*), has always been impatient with an online publishing model that echoes the print version, and now she's pushing her ideas even further. The Web entrepreneur (and subject of a Netrepreneurs column in *WebMaster*, September/October 1995) has put more than 50 books online, and her company has built several corporate Web sites.



Fillmore's latest effort is the world's first Internet Rights Auction, held at the 48th Frankfurt Book Fair in October 1996. Sponsored by Open Book Systems and the Frankfurt Book Fair, the auction sold the Internet rights to two books: Maeve Binchy's novel *Circle of Friends* and Gregory Rawlins' *Moths to the Flame: The Seductions of Computer Technology*.

Unlike most rights auctions, this one required potential buyers to submit not only a dollar amount but also a detailed proposal of exactly how the book would be presented on the Web. It was that proposal, not the money, that persuaded Binchy to sell her novel to a new Dutch company that will use *Circle of Friends* to help teach an online publishing course, says Fillmore.

"There was another, higher offer that involved putting the book file online," says Fillmore. "But it was nowhere near as interesting." ***–Carol Hildebrand***

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Texas Tech

IN THE REAL ESTATE market, there's nothing more important than location. That's especially true in sprawling Texas, where until recently a real estate broker in Texarkana would have had to drive to Fort Worth—290 miles—to bid on a property being auctioned by the federal office of Housing and Urban Development (HUD). "If you get stuck in a traffic jam, you may be too late," says Claudia Key, owner of Dallas-based realty firm Property Place.

HUD needed a way to erase the distance between its Fort Worth office, which handles real estate auctions, and the 3,000 Texas brokers who are licensed to buy the agency's properties. Now it has one. Since Nov. 1, brokers have been able to place bids, monitor the bidding action and receive notification of a bid's acceptance on HUD Homes Fort Worth (*www.hud.org/fwhud/*), a site that also offers statewide real estate news and notices and information about HUD's real estate owned (REO) properties.

The Web service is more than a great tool for brokers; it also eases the agency's workload and budget, says Louis Ybarra, director of the single-family housing division of Fort Worth HUD. Selling between 3,000 and 4,000 properties a year, his office used to need five people working four days a week to process all of the REO bids. Now that almost all of the bidding is handled on the Web (some bids still come through an interactive voice-response system), HUD employees can focus on more important tasks, such as monitoring REO property managers and ensuring that properties are maintained and repaired.

If the effort's performance to date is a reliable indicator, the Web site should reduce the average time HUD maintains a property before it is sold from six months to five. And the office expects to spend $960,000 less per year in newspaper advertising and to print its own recently discontinued 16-page weekly property listing.

Duly impressed, HUD plans to equip 17 of its 40 U.S. offices that are on the Web with the same online bidding system by mid-1997, says Keith Bass, president of Los Angeles-based Tower Communications, which developed the online bidding system. "The brokers have, surprisingly, been pretty aggressive technologywise," Bass says. "The other [HUD] offices are eager to get involved."

–Heath Row

ILLUSTRATION BY PHIL MARDEN / PHOTOGRAPH BY FURNALD / GRAY

Off the Cybershelf

In *Designing Business: Multiple Media, Multiple Disciplines* (Adobe Press, 1996), design guru and information architect Clement Mok tells us how information technology is changing the way businesses communicate and how companies can use design as a way to bring new media under control.

Mok realizes that dudes in suits don't always see eye to eye with the creatives, and he recommends that the suits get with the program, specifically that they wake up to media convergence. Designers, on the other hand, are encouraged to learn all they can about their companies' business partners and customers, and to keep first things first: Bells and whistles are OK, but not if they drown out the company's signals.

Mok offers several case studies, including 24 Hours in Cyberspace (*www.cyber24.com*), The Microsoft Network (*www.msn.com*) and a proposed Sony New Technology entertainment center. Storyboards and maps show how the organization of information—i.e., its design—can determine its effect, while emphasizing that the concerns of design, business and technology are not mutually exclusive.

While much of the book is plain common sense (consider the user; align design with business goals), Mok's step-by-step approach to identifying needed changes, preparing new material and implementing design produces a truly useful primer for businesses taking a multifunctional approach to creating multiple media.

-Heath Row

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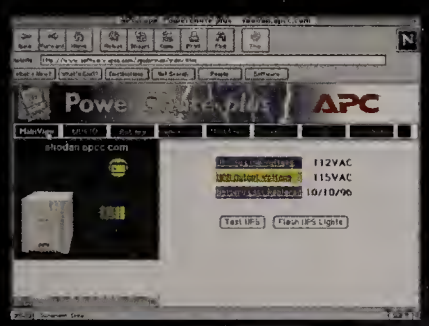

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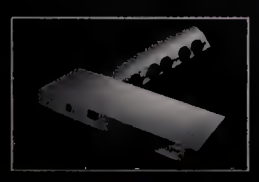

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The European Plan

While the United States remains the indisputable champion in the race to populate cyberspace, other countries are catching up. In the past two years, for example, the number of Internet servers in the Old World has grown at a slightly faster rate than in the New.

That's partly because European companies are adopting new communications strategies as they downsize, moving from expensive private networks to public ones such as the Internet. Also, most European nations anticipate that as they deregulate telecommunications services over the next couple of years, Internet connection costs will drop. A few months ago, according to the Gartner Group Inc., a 64Kbps leased-line connection to the Net priced at $300 to $400 in the United States came in at $500 in Sweden, double that in France and Germany, and up to $3,000 in Spain and Italy. That's per month. Consumer dial-up costs are comparatively prohibitive.

Yet despite those costs, Europeans are signing up for Internet service at a rate of 14,000 per day. And the number of service providers on the Continent has increased fivefold in one year.

The Internet is expected to catch on fastest in countries with liberal telecom regulations and solid records of embracing new technologies. Leading the growth projections are Finland, Sweden and the United Kingdom, all with open telecom markets and strong penetration rates for traditional phone lines, personal computers and cellular phones.

Currently, Germany hosts the most Web servers outside the United States, but even there, regulated telephone service and efforts to control content are short-term barriers to growth. Other countries, including Italy and Spain, have lagged because of language barriers, political problems or sluggishness in telecom deregulation.

As always, France remains a special case. Internet growth has been stunted there by language barriers (fewer people speak English, the Internet's unofficial language, than in other countries); cultural resistance (many French dismiss the Internet as an American-dominated medium); and the existence of Minitel, a nationwide information utility accessible from free, government-provided dumb terminals.

As for the rest of the planet, best-guess consensus sets the worldwide Internet population at around 30 million, a figure expected to triple by 1999. According to estimates by the Internet Society (*www.isoc.org*), the number of Web servers in North America topped 5 million this year compared with just over 2 million servers in Western Europe. (Asia Pacific was third, with 689,000; the other regions—Eastern Europe, Africa, South America and the Middle East—had fewer than 75,000 servers each.)

–Anne Stuart WM

Blooming Amazing

- ✔ Value of online sales for 1-800-FLOWERS in December 1995: 1.6 million
- ✔ Value of online sales for 1-800-FLOWERS in December 1996: $4 million

Consumer Reports

From *Taking Off: The State of Electronic Commerce in America*, a random survey of 2,003 adult consumers and 501 business executives and one of the rosiest reports we've seen on online purchasing. The study was conducted by the independent research firm Odyssey and was paid for by AT&T Corp.

40% of consumers said they would make online purchases in 1997

55% of consumers said they would make online purchases in the next five years

17% of business executives said the Internet is a very important vehicle for selling their products

33% of business executives said the Internet will be a very important vehicle for selling their products in the next five years

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Something for Everyone

PURVEYORS OF DOWN PARKAS, SAUSAGE STICKS AND BRAIN-RIDGE FEATURES ATTRACT FRESH INTEREST ON THE CATALOG SITE

BY EDWARD ENGEL

IN 1872, Montgomery Ward & Co. Inc. introduced the country's first mail order catalog, a resource that became an American institution by offering home goods to tens of thousands of people living in small towns and on farms. A century and a quarter later, Gary Baker, the creative force behind an electronic one-stop shop for catalogs, is wagering that his brainchild will have a similar impact on the digital world. The times, they have a-changed, and snail-mailing an unsolicited Yellow Pages-size tome to backwater burgs, or anywhere else for that matter, is no longer an efficient way to do business. What does work, Baker believes, is letting the fingers of consumer Netizens do the walking.

Baker's baby, The Catalog Site (*www.catalogsite.com*), is an electronic mall for companies with print and/or online catalogs. Clients range from the large and conventional (Eddie Bauer, Hickory Farms) to the small and quirky (Paradise on a Hanger, a haven for Hawaiian-shirt aficionados). Visitors can search by product type or consult the Catalog Big Board, which lists all of the more than 200 tenants in alphabetical order. The first click takes users to a templated storefront that in most cases offers phone and fax numbers, store hours, types of payments accepted and other basic information. Their interest piqued, users can dig deeper, ordering a free paper catalog or traveling to a company's Web site, if it has one.

THE BIG DRAW: Alan Bennett emphasizes that The Catalog Site isn't a mall: It's a marketer adept at attracting customers.

PHOTOGRAPH BY FURNALD / GRAY

But The Catalog Site is more than just an electronic signpost. Visitors can preview paper catalogs, see what's on sale, order gift certificates and sign up for a biweekly e-mail newsletter. In addition, the site reviews many of the catalogs, rating them on such factors as design, ease of use and originality. (Most—not surprisingly—score pretty high, typically 4.8 or 4.9 on a scale of 1 to 5.) Then there's the site's Dish section, a rambling collection of online gossip and chatter that cleverly links back to catalogers' pages. "We're giving people more than just straight text," says Alan Bennett, president of Commonsite LLC, the company behind The Catalog Site. "That gives them more reason to come back."

All but a handful of the Santa Monica, Calif.-based company's clients produce paper catalogs, which customers can order through the site. Fewer than half have their own, separate Web presences. Baker and Bennett offer clients four basic levels of marketing service, though combinations are possible at higher rates. They provide an order form for a company's paper catalog and a Web page; an additional page for the company to display its products; online ordering capabilities for

those products; and a link to the business's site. Baker and Bennett are reluctant to talk pricing, but for the basic service—an order form and an introductory page—companies may pay $1,200 to $1,500 a year. Unlike many companies with similar models, The Catalog Site does not take a cut of sales made through the site.

When The Catalog Site launched in June 1995, its 30 clients received about 2,500 catalog requests a week. The number of requests has climbed to 17,000 a week, and each week about 60,000 visitors show up just to look around. The company is especially successful at finding customers for its more obscure tenants, such as the John Rinehart Taxidermy Supply Co. and School (purveyor of "patented preset eye and brain-ridge features").

Although the site earns its doubloons from the catalogers that congregate there, Bennett emphasizes that it does not fit neatly into a landlord-tenant paradigm. "We're a marketing company, not a Web developer," he says. "Our job is to go out on the Internet and find gardening customers, for instance, in ways that [a single gardening catalog] can't."

Another plus for clients is that, because visitors must pass through several steps before requesting a catalog, they are more likely to be "qualified" customers—those who actually buy something. That process "tends to weed out a lot of people who just want a freebie," says Kira Locatis, co-owner of Exclusively Bar-B-Q Inc., a small, family-run mail order business that is testing the online waters with The Catalog Site. Each week the company, which has no Web presence of its own, gets about 50 to 100 catalog requests through the site. That's about as much as it can handle, Locatis says. The Catalog Site is Exclusively Bar-B-Q's second-best source of grill groupies after Shop at Home, a popular Colorado-based print and online catalog of catalogs.

Baker and Bennett bristle at comparisons with the growing number of print catalogs of catalogs. "Like anything, it's a metaphor that's easy to sink your teeth into. But that's not what we are," says Baker. "We're much broader, in large part because of our interactivity and because we bring real value to people instantly." The pair also dismiss the few other online services for catalogs as essentially list brokers, enticing visitors to order catalogs so they can compile lists of cheese-pack enthusiasts and then turn around and sell them to Joe's Maison de Fromage Inc., for example. "That doesn't help the cataloger market," says Baker.

Baker, a graduate of the University of California at Los Angeles film school and a former director for The Disney Channel, has been tuned into online marketing since 1984. But the light bulb for The Catalog Site didn't click on until a decade later, when he opened his mailbox one day and found himself wrestling with a score of catalogs.

"As I ripped them out, I thought, 'Gee, these are all incredibly well produced,'" says Baker. "And that day, every one of them went into my trash can. I thought, 'What a waste. This is so inefficient.'"

Online opportunities were much on Baker's mind back then as a result of his work on an insurance information area for America Online. The Internet model, he says, was "one of those 'Aha!' things. It became a way to benefit users, benefit companies and fulfill merchandise requests immediately."

For help, Baker turned to Bennett, the founder of *American Photographer* magazine (now *American Photo*) and an experienced direct marketer. The pair rounded up a half dozen others who knew about sales, marketing, catalogs and the Internet. That group became the founding investors of The Catalog Site. Eleven employees are currently on board, and the company expects to keep hiring now that—as of last spring—it has started to show a profit.

The Catalog Site runs on a Sun Microsystems Inc. Sparcstation 5 microcomputer and uses two ICat Corp. products: Commerce Publisher, for catalog creation, and Commerce Exchange, for secure credit card transactions. Orders for print catalogs and gift certificates are processed by a Netscape Secure Server, which sorts the thousands of requests. The company also recently became a beta site for Microsoft Corp.'s Merchant Server, a package similar to Commerce Publisher.

Baker and Bennett consider a catalog resource and the Net to be a combination with staying power—although probably not the 125 years' worth exhibited by Montgomery Ward. "We feel the Internet will have a significant impact on commerce and accelerate the trend of direct-to-consumer sales, bypassing the middleman," says Bennett. "The best place to anchor that sort of revolution is the direct marketing field. And catalogs seem to be the wisest choice in that field." WM

Edward Engel is a freelance writer in Philadelphia. He can be reached at Japer2@aol.com.

www.catalogsite.com

Help Me If You Can

GATHERING, ANALYZING AND ACTING ON CUSTOMER INFORMATION IS AN ENORMOUS TASK. FORTUNATELY, YOU DON'T HAVE TO DO IT ALONE. BY JIM STERNE

The good news is that the folks upstairs are listening to the right people. They've read Martha Rogers and Don Peppers' *The 1:1 Future: Building Relationships One Customer at a Time* (CurrencyDoubleday, 1993). They understand Tom Peters' rant about treating customers as their most important corporate asset. The bad news is that they expect you to start mining that asset today.

Upper management correctly wants to establish electronic relationships with your company's customers. They want data warehouses for profiling; customer service reps online in real-time for e-mail, chats and bulletin boards; and online analytical processing drill-downs of it all. But nobody is saying anything about new, massively parallel, symmetrical multiprocessor, load-balancing servers. There has been no mention of budget to quintuple your Web organization's head count. There are no classes you can take on how to build a 21st century marketing powerhouse. Who ya gonna call?

There are, of course, products that promise to solve at least some of your problems by keeping track of visitors to your Web site. You've heard about the Microsoft Corp. Personalization System. You've read about Oracle Corp.'s Project Apollo. You've visited Onward Technologies Inc.'s DirectChoice Web site. But you need something that's been in use, not just on the drawing board. Time to call BroadVision Inc. (*www.broadvision.com*).

The BroadVision One-to-One application system lets Web developers build rules that dictate what editorial content, advertisements, product pricing and promotions are shown to visitors based on their personal profiles. NetRadio Network uses it to let listeners create their own mix of music, news, weather and sports. The Prodigy Shopping Network uses it to serve up product recommendations, merchant incentives and electronic coupons.

But personalization tools don't just help you to cater to your visitors' desires; they're also excellent for gathering data. Sophisticated tools ask users to fill out forms and answer the occasional question, and they track visitor progress through a site via cookies and server logs. By analyzing a handful of data types collected using those tools (and other methods), you can create an amazingly lifelike portrait of individual customers and an accurate landscape of your clientele (see "The Sum of Your Parts," Page 24).

Data Deluge

Of course, with that much information, you might need help crunching the numbers. You've got tens of thousands of customers, terabytes of profile particulars and a disc farm that is already full of data. Who ya gonna call?

For 27 years, Epsilon (*www.epsilon.com*) has been supplying the big boys with complex, multivariate models of their customers based on enormous stockpiles of statistics. Immense databases are routine for this subsidiary of American Express Co. Customer relationship histories and transactional data go in one end; actionable marketing information comes out the other. In its own marketing parlance, Epsilon offers "a single, companywide repository of every contact you have ever had with your customers." Think of it as the Craig Breedlove of data analysis.

But Epsilon is not just an equipment rental shop with trillion-floating-point-operations-per-second (TFLOP) processors that its clients can bend to their will. The company uses regression models, neural networks, fuzzy logic and genetic algorithms to perform financial analysis, marketing

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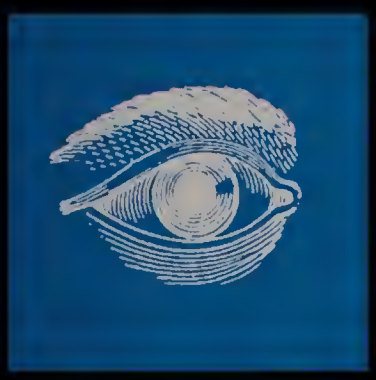

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program response analysis, trend analysis, life cycle analysis, migration analysis, channel analysis and lifetime value analysis.

Why should Epsilon be on a webmaster's radar screen? Because it teamed up with BroadVision back in October. That combination allows a company not only to collect details about visits to its Web site but also to correlate that information with data found in its sales-force automation database, customer service records and accounting ledgers. Now think of Epsilon as the Craig Breedlove of customer psychoanalysis.

Customer Interface Outsourcing

BUT WHAT HAPPENS when all your happy site visitors decide they want to become happy customers? Who *they* gonna call?

When one leading computer company put up its Web site three years ago, it offered no e-mail link, no 800 number, no way for customers to contact it directly. Why? Because it was worried about being overrun with interest. Who, the various divisions asked, should be assigned to handle all that e-mail?

John Petrillo, AT&T Corp.'s executive vice president for strategy and new service, has an answer: Outsource it. He turned to an unnamed outside company to handle e-mail cries for help with authentication errors, modem detection problems and connection snafus.

So who can *you* call? One possibility is Matrixx Marketing Inc. (*www.matrixx.com*). Since 1988, it's been answering other people's phones, and many of the products it supports—Hitachi America Ltd. PCs and Attachmate Corp. software, for example—have sophisticated customer service requirements. This $250 million subsidiary of Cincinnati Bell Inc. has 14,000 employees in 21 call centers.

Now Matrixx is also answering e-mail. When Gatorade Co. says, "Thanks for taking the time to write to the Cooler Site," it leaves the driving to Matrixx. "We respond to questions about nutritional value as well as sports statistics, whatever it takes to satisfy Gatorade fans," says Elizabeth Stites, Matrixx's director of marketing. "We now train our service reps in the fine arts of netiquette and 'cybergrammar' as well as with phone manners and voice coaching."

Surprisingly few among the Fortune 500 are emphasizing e-mail for customer communication. A casual Matrixx survey of 100 such companies in June 1996 revealed a healthy number of unclear-on-the-concept Web sites, with 48 volunteering no e-mail customer communication option at all.

Seeing such obvious need, Matrixx developed a system called CybeResponse, which manages e-mail by routing it to the appropriate group of "cyberreps" or the individual domain specialist and recording messages for aggregate analysis. Dropdown menus provide staff with preapproved answers to frequently asked questions. A cyberrep can then rework the answers to match the style and demeanor of the inquisitor.

Cyberreps are required to undergo as much as four to six weeks of training, during which they must master customer data, product information, corporate image information and competitive positioning information. Trainees often sit alongside seasoned reps for a week and then switch chairs with them. Finally, the rep trainees are allowed to fly solo.

That sort of training is critical when dealing with e-mail, which after all is a legal document, unlike hearsay compiled from the informal communication that takes place in an 800 number conversation. As Stites puts it, "It's great to experiment with technology. It's not OK to experiment with customer service." WM

The Sum of Your Parts

The following data types will help you get a bead on your customers:

☛ *Compugraphics* are brought to you by HTTP and are easily categorized. You can quickly capture what operating systems your visitors are using, which browsers they have and what version. Child's play.

☛ *Clickographics* require using cookies or URL-embedded identifiers to record a visitor's navigation path through your site. That helps you determine their attention span, focus and appetite. Are they wandering around, clicking on the most eye-catching banners and buttons? Or are they hunting down something specific?

☛ *Demographics* are the basics about a person: age, gender, salary, education and so on. Some of that information can reveal a great deal. If we know how far you drive to work, often we can guess how much you listen to the radio. If we know your ZIP code, we can estimate the value of your home and assume the neighborhood average for the number of people in your family.

☛ *Psychographics* focus on attitude: Interests, hobbies, beliefs and political views. Are you more inclined toward hang gliding or canasta? Would we be more likely to find you at a PTA meeting or in a mosh pit? If you were going to vote today...? Both demographics and psychographics are amassed via direct questions on the site.

☛ *Communigraphics* measure communication skills—things like cooperation quotients, participatory propensities and leadership qualities. That information can be collected if you run a threaded newsgroup or a listserv. *–J. Sterne*

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*Jim Sterne (*jsterne@targeting.com*), president of Target Marketing of Santa Barbara, is an Internet marketing strategy consultant and the author of* World Wide Web Marketing *and* Customer Service on the Internet.

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wired

How once-backward utility companies are connecting their grids and pipelines to the World Wide Web

By Lynda Radosevich

For years, according to stereotype, the utilities industry has been something less than a technological live wire—at least in terms of information systems.

Kennen Schmitz, business development director for BSG Corp. in Dallas and an expert in utility companies' information systems, cites the following example: "When I was at EDS [Corp.] a couple of years ago, we were dealing with a utility that was running Lotus's 1-2-3 mainframe version as its office-automation application," he says with incredulity.

But by the time you read this story, utilities will have jumped to the forefront of Internet-based business transformation. In particular, electric utilities will be the first and largest nationwide commercial-sector industry to implement business-to-business electronic commerce on the Web.

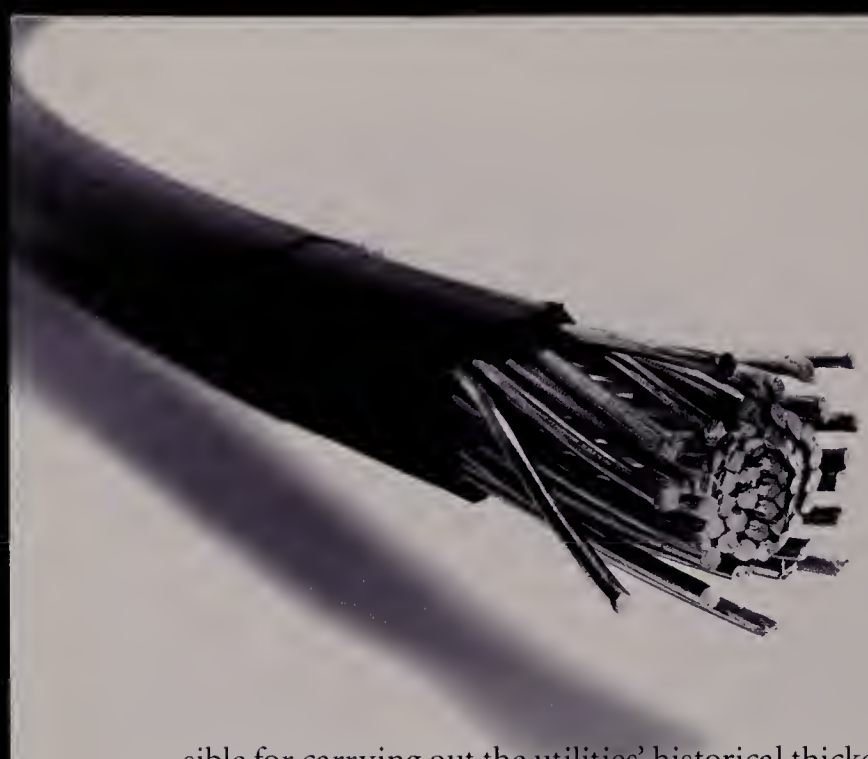
What's driving that major turnabout is the havoc caused by deregulation. After enjoying nearly 90 years of monopoly status, gas and electric companies alike now face open markets and real competition. In the new environment, the once-alien notion of customer service has taken on fresh urgency. The Web offers utilities a new medium for conducting business more efficiently and for marketing to industrial and residential customers.

"Utilities have always been behind the [customer service] curve because they didn't care what large customers thought of them," says Adi Karev, a senior manager at Deloitte & Touche Consulting Group in Pittsburgh. "With deregulation coming in, they do care."

But perhaps the most potent stimulant of transformation is the heavy hand of government. To foster openness, the Federal Energy Regulatory Commission (FERC), the agency responsible for regulating utilities, has ordered electric companies to build Web sites that allow wholesale electric customers to shop around and place orders freely. (Deregulation is a painstaking process, not a sudden emancipation. FERC, the same agency respon-

PHOTOGRAPH BY JOHN SOARES

JEFF GELTZ
New England Power Co.'s manager of information services was instrumental in the Web's adoption as the commerce platform for electric utilities.



By the time you read this, the electric utilities will be the first and largest nationwide commercial-sector industry to implement business-to-business electronic commerce on the Web.

sible for carrying out the utilities' historical thicket of regulations, oversees that process, the pacing and mechanics of which are themselves subject to a high degree of regulation.)

The resulting metamorphosis offers an example to other industries of how they can use the Internet to compete in a rapidly changing business environment. Other commerce sectors may not have the stick of deregulation and government mandates, but what the utilities are doing shows how the carrot of economical, Internet-induced change can be critical even to those unaccustomed to being on technology's cutting edge.

Oasis

THE MOST GROUNDBREAKING MOVE is a newly established series of electric utility Web sites called Oasis (open access same-time information systems). Depending on fluctuating demand, an electric utility might have surplus electricity that it could sell, at an advantageous price, to a "power marketer"—a wholesaler that resells lower-priced power to its own industrial customers. But locating and purchasing excess power is only half the battle. It then has to be moved, over competing power grids, from its source to its destination. Streamlining the logistics of that transmission challenge is what Oasis is all about.

Oasis Web sites let electricity marketers check on the price and availability of a utility's power grid and then schedule and reserve transmission capacity for the transfer of wholesale electricity. Thus, a marketer working for a steel company can buy electricity wherever it's cheapest and move it on the lines that lie between the power source and customer.

An estimated $25 billion to $50 billion worth of transactions will be conducted over Oasis systems in 1997, making it the largest electronic-commerce initiative to date, according to FERC and industrywide figures.

"We're definitely not talking about selling CDs over the Net," says Alexander Cavalli, vice president and chief technical officer at TradeWave Corp. in Austin, Texas. TradeWave is providing security services for eight of the groups developing Oasis sites.

The Oasis project stems from an April 1996 ruling by FERC that jolted the electric industry into action. The ruling mandated that public electric utilities use the Web to give wholesale sellers and purchasers equal access to information on transmission availability and pricing. Prior to that order, wholesalers relied on personal contacts, faxes and phone calls to get the services they needed. Using the Web to open up the reservation process is a key part of deregulation, and FERC gave the utilities until Jan. 3 of this year to comply with the order, according to Bill Booth, special assistant to the director in FERC's electric power regulation office in Washington.

FERC officials chose the Web over private networks because it provided a slick and surprisingly economical solution to the open-access problem. Also, they felt they could not mandate that the utilities purchase and install proprietary systems. The officials were mindful of private bulletin-board systems used for a similar purpose in the gas industry (see below), which lacks standards.

"We wanted an open system and left it up to the industry to develop it," Booth says.

TO COMPLY WITH FERC's order, many of the nation's electric companies banded together into regional power-pool groups consisting of 10 to 15 utilities. Each of these groups would operate a Web site for its region, thereby sharing the development and maintenance costs. "We all realized we had to do the same thing, we had relatively little time to do it and we could get economy of scale if we banded together," says Jeff Geltz, manager of information services at New England Power Co. and chairman of the New England Power Pool's Oasis team. (Geltz was also instrumental in persuading FERC to choose the Web as the platform for the new system.)

A task force representing more than 250 utilities chose to outsource the project and selected BSG, TradeWave and Cegelec ESCA Corp. to develop the Web sites. A vital piece of the system is the security component, which is handled by TradeWave. The system uses security techniques such as public key encryption and certification to guarantee that only authorized people can use the Web sites. (IBM Corp. supplies the certification authority infrastructure as part of a subcontracting relationship with TradeWave.) TradeWave calls the arrangement a virtual private Internet because it is, in effect, roped off from the rest of the Internet by virtue of the electronic passwords and keys, according to Cavalli.

PHOTOGRAPH BY JOHN SOARES

Dave Harris

KN's Energy Market project manager predicts a 75 percent reduction in system costs.

PHOTOGRAPH BY ERNIE LEYBA

But other utilities aren't quite so certain that the Internet is a safe bet yet, and a number are working with vendors on alternatives. In November, nearly six months after the BSG/TradeWave/Cegelec system was unveiled, IBM and Siemens Power Systems Control joined forces to launch their own Oasis system. "There is some distrust when you speak to utilities about running their networks over the Internet," says Nick Klein, manager of global marketing at Siemens Power Systems Control's Minneapolis office.

The IBM/Siemens system runs on the privately operated IBM Global Network, though it can be accessed via Web browsers and the Internet. Nonetheless, the portion where the data resides is private.

By mid-December, the vast majority of Oasis sites had been tested (see "E-Commerce with a Human Face," Page 30). They went live on schedule Jan. 3, Geltz says.

E-Commerce with a Human Face

Ease of use is only the beginning. Then come the niggling little rules...

Prelaunch trials of the Oasis system that were conducted late last year demonstrated clearly that an industry doesn't necessarily have to be technologically savvy to begin using state-of-the-art electronic-commerce systems. With systems integrators taking care of the development work, the main technology burden on the utility end is learning an application interface.

Jim Dolan had not been a computer professional prior to landing the newly created Oasis operator position at Peco Energy Co. in Philadelphia last spring. But getting up to speed on software from National Systems & Research Co., the systems integrator that wrote Peco's Oasis software, was not difficult. "It's really like learning a new word processor," Dolan says.

As is often the case with information technology, the most difficult aspects of Peco's Oasis system had to do with the people and processes, not the technology, he says. For instance, in order to give National Systems & Research the proper system specifications, Peco had to interpret the FERC order guidelines and determine how to carry them out in a Web application. One guideline states that certain kinds of weekly orders for transmission capacity can displace certain kinds of daily orders. But should the system allow someone who places a daily order the option to convert to a weekly order once a weekly customer challenges his or her position? Or must the daily orderer get bumped automatically in case of such a conflict? Answering myriad small questions like those was the hardest part of the project, Dolan says.

–L. Radosevich

Still, the level of sophistication remains very uneven across the utilities industry. While many power companies are focused merely on using the Oasis system to comply with FERC's order, others are jumping on it to change their core business model.

"There are some people who really get it," says Schmitz, "[But] others are still milling around wondering why it's happening or, worse, ignoring the importance [of these changes]. And those people are in for a day of reckoning."

New England Electric System (NEES) exemplifies a company that gets it. In September, NEES announced a gut-wrenching decision to sell off its power-generation plants as a result of deregulation. NEES, based in Westborough, Mass., is the parent company of New England Power and other subsidiaries. Instead of creating watts, the company will shift its focus to transmitting, distributing and marketing watts. And Oasis will play a key role in the company's new identity as a power wheeler and dealer.

"[Oasis] is enabling companies to get out of generation and into marketing," says Karen Berardino, a NEES spokeswoman.

More companies are sure to follow in New England Electric's footsteps. "Utilities, in general, have to make a decision over the next few years about what they want to be. The choices range from being energy merchants to being wire-and-pipes access companies," says Steven Moffitt, a senior manager at Ernst & Young LLP's Southwest Marketing Consultant Group in Houston.

Energy Market

While electric utilities are forging ahead with Oasis, the gas industry is beginning to move piecemeal in much the same direction. In one sense, gas companies are ahead of their electric company counterparts because they already have private, proprietary bulletin board systems in place for scheduling gas transmissions through each other's pipelines. But the bulletin boards are not interconnected, and the proprietary nature of the infrastructure actually makes it more difficult for gas companies to migrate en masse to the Web than it was for the technologically unencumbered electric companies. Still, the gas industry is taking a close look at Oasis and plans to implement a similar system, Booth says.

In the meantime, individual gas companies are beginning to migrate on their own. In September, KN Energy Inc., a $1 billion, publicly held natural gas transportation company in Lakewood, Colo., launched a Web-based system called Energy Market that allows its customers to schedule the transport of gas across the 18,000 miles of KN Energy's pipelines.

Energy Market supplants a DOS-based bulletin board that required customers throughout the Midwest to download files, calculate their bids offline and then dial in and upload the bid files. To support the older system, KN Energy had to provide proprietary software and redistribute it whenever the software was upgraded. Besides being unwieldy, that arrangement was also expensive: KN paid $20,000 per month to General Electric Information Systems to maintain the application on a mainframe with dial-up lines.

"We decided to replace it because our transactional costs with GE were so high it was killing us," says Dave Harris, KN's project manager for Energy Market.

The company built the system in three months using the equivalent of four full-time programmers and with the help of WebObjects software from Next Software Inc. A Sybase Inc. database acts as an intermediary to the mainframe sys-

tem where customer information is stored. The WebObjects application takes customer requests and stores them in the Sybase database, and a mailbox system integrated with WebObjects creates a confirmation.

Although the old system dated only to 1993, Harris says it was worth replacing. Energy Market hasn't been in production long enough to measure the hard and soft returns, but he estimates that it will run $60,000 a year in operating costs (including portions of salaries for people to administer the database)—roughly one-fourth the cost of the old system.

In the Pipeline

As beneficial as they are, systems such as Oasis and Energy Market are first-generation efforts that leave plenty of room for growth. One user of Oasis test systems, Glen McCartney, a senior power dispatcher with Engelhard Power Marketing Inc. in Iselin, N.J., would like to be able to go to a single Web site or deploy a software agent that would comparison shop for transmission prices. Also, in Oasis's current incarnation, McCartney must keep polling Web sites to see whether posted requests have been accepted. "I'd like to receive an acceptance notice by fax, e-mail or pager," he says.

The Oasis infrastructure likely will provide a foundation for ever-richer applications meant to help utilities scratch out new turf in an unfamiliar business territory. Schmitz predicts that within six months to a year utilities will begin deploying advanced decision-support systems that download large volumes of data from Oasis and sift through them for statistical patterns or variances that would be helpful in guiding smarter economic decision making. Such applications will be invaluable in assisting utilities as they transform from regional monopolies into national competitors.

Also, systems such as Oasis and Energy Market to date have focused on business-to-business transactions. But as deregulation marches forward, experts anticipate more customer-oriented applications.

One of the most important such customer initiatives is real-time pricing information. As the name implies, real-time pricing gives customers the information they need to switch services based on cost. Pilots are already underway. For example, according to E&Y's Moffitt, Oklahoma Gas & Electric Co. is teaming up with a local cable television provider and with telecommunications equipment maker Ericsson Inc. to test a system that lets customers review billing information and pay bills by credit card or money transfers.

In addition, utilities such as Cinergy Corp., a $4 billion energy company based in Cincinnati, have on the drawing board Web systems that will allow residential customers to check their usage patterns and pay bills online. "[The Web] is going to become an important medium for getting out there and providing customers with the kind of information at their fingertips that they're going to want to have," says Jacque Reese, a senior information engineering consultant at Cinergy.

However, such systems won't be commonplace soon. "We're probably at least 10 years away from this happening at the residential level, but industrial customers will see it by the year 2000," Moffitt predicts.

Those are ambitious plans for an industry in which some members reportedly still have trouble loading Windows onto personal computers. But the impact of the Web on the utilities sector already is mighty, and it will only continue to grow.

"This is an unfolding story," says Schmitz. But the switch is already thrown. WM

Lynda Radosevich is a New York-based senior editor for Infoworld, *an IDG sister publication to* WebMaster. *She can be reached at* lynda_radosevich@infoworld.com.

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Cinergy Corp.
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KN Energy Inc.
www.kne.com/

National Systems & Research Co.
www.nsr.com

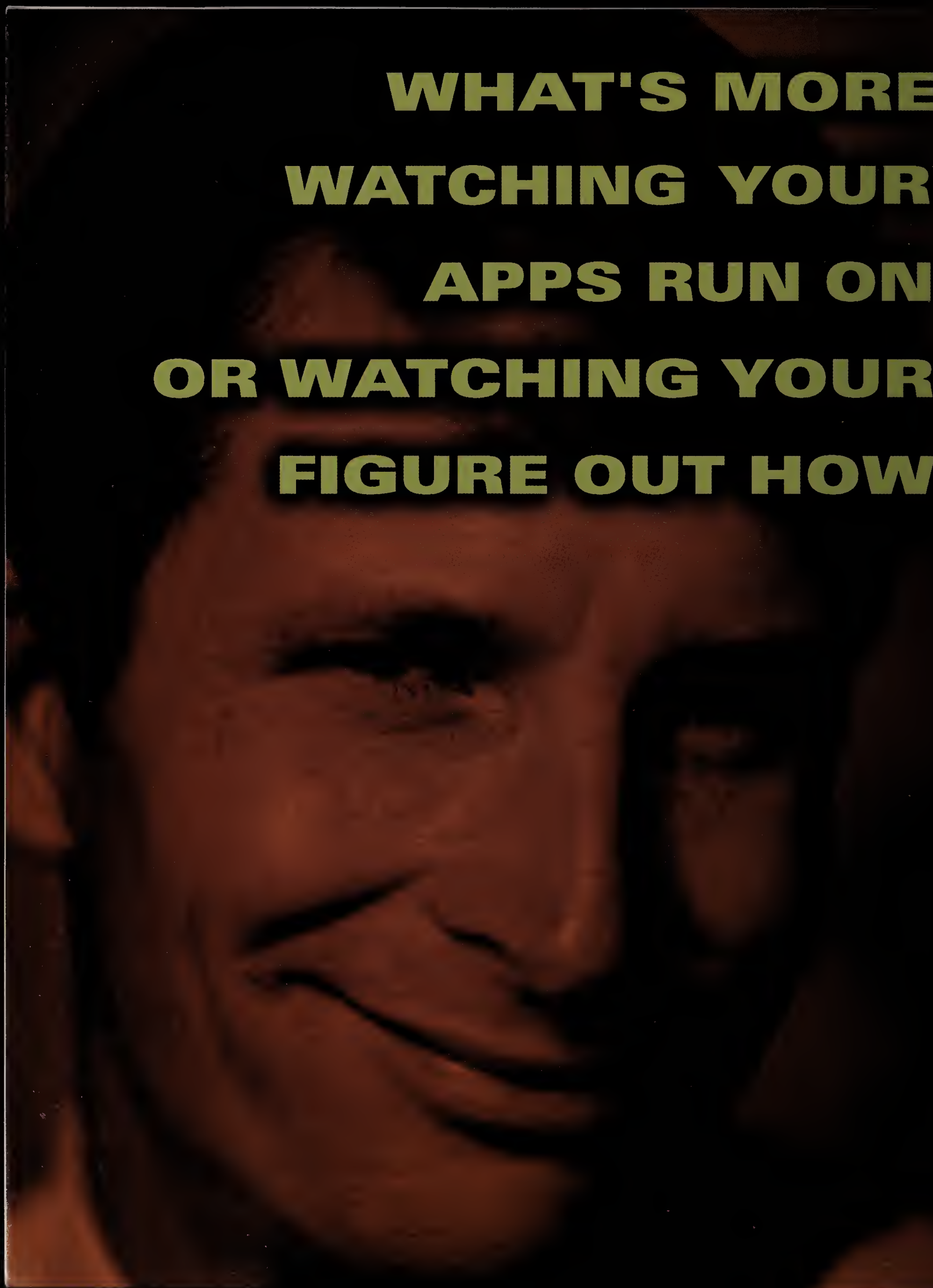
New England Electric System
www.nees.com/

PECO Energy Co.
www.libertynet.org:80/~peco/

TradeWave Corp.
www.tradewave.com

Utilities have on the drawing board Web-based initiatives that will allow big customers to analyze usage patterns, pay bills online and shop for the lowest rates using real-time pricing data.

PHOTOGRAPH BY JOHN SOARES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Face

Designing an intranet is different from designing an external Web site. But it's no less important.

BY CAROL HILDEBRAND

ILLUSTRATION BY DAN YACCARINO

PLUS...

BEFORE-AND-AFTER LOOKS AT THREE INTRANET REDESIGNS

Facts

FELLOW EMPLOYEES have learned to tiptoe past Jakob Nielsen's door. That's because Nielsen, who has the curious title of Distinguished Engineer in Sun Microsystems Inc.'s SunSoft Strategic Technology Department, is prone to hauling in hapless colleagues and asking them for drive-by opinions of his renovation of Sun's intranet, SunWeb.

"I ask them things like, 'What do you think of this icon? What kind of information does it give you?'" he says.

Armed with the data from his impromptu surveys as well as feedback from more formal usability studies, Nielsen is redesigning SunWeb's user interface to make it easier for employees to pluck the bits of information they need when they need them.

Nielsen is convinced that good intranet design can save employees time, and he knows that time saved is money saved. He's even done a little off-the-cuff transposition of mouse clicks to dollars.

"I multiply the number of employees using the Web by the amount of Web usage by the amount of time saved by the hourly cost of an employee," Nielsen explains. "I estimated that users would save one second per page viewed if they didn't have to wonder about the meaning and placement of the buttons. Also, users would save five minutes each time they tried navigating a new subsite using standardized navigation rather than having to hunt around for information. Furthermore, I estimated that employees view 12 pages per day and two new subsites per week. Ultimately, I computed that just by standardizing buttons on SunWeb we can save $1 million in employee time. By standardizing the navigation toolbar we can save $10 million a year."

Nielsen's numbers are clearly rough, but every corporate executive would agree that time is money and that a fast lane to corporate information is more cost-efficient than a slow lane.

Yet when it comes to design, high-level attention often goes first to external Web sites, those digital extravaganzas meant for all the world to admire. Intranets are more likely to be the design correlative of those black-and-white corporate newsletters that are run off on the boss's copy machine. But presentation counts inside your company as well as outside. And while an intranet need not be built for glamour, it had better be built for speed.

An intranet site is far more functional than an Internet site, says Nielsen. "On external sites, it's almost your goal to get people to stay at your site," he explains. "Internally, the goal is to get them information so they'll get off the Web and back to doing work."

That's just one reason to design an intranet differently. Another is the lexicon of corporate metaphors and designations whose meanings are clear to insiders but unknown to the general public. Because intranets are directed at a known audience, the interface can take advantage of commonly understood symbols. For example, the Xerox Corp. home page has an icon labeled XMM—an abbreviation for Xerox Management Model that is well known only to people who work at the company. A corporation's structure presumably is also familiar to most employees and can therefore be adopted as a model for the intranet's structure. That foundation may make designing an intranet site simpler than designing an Internet site. Still, the best intranet design doesn't come easy.

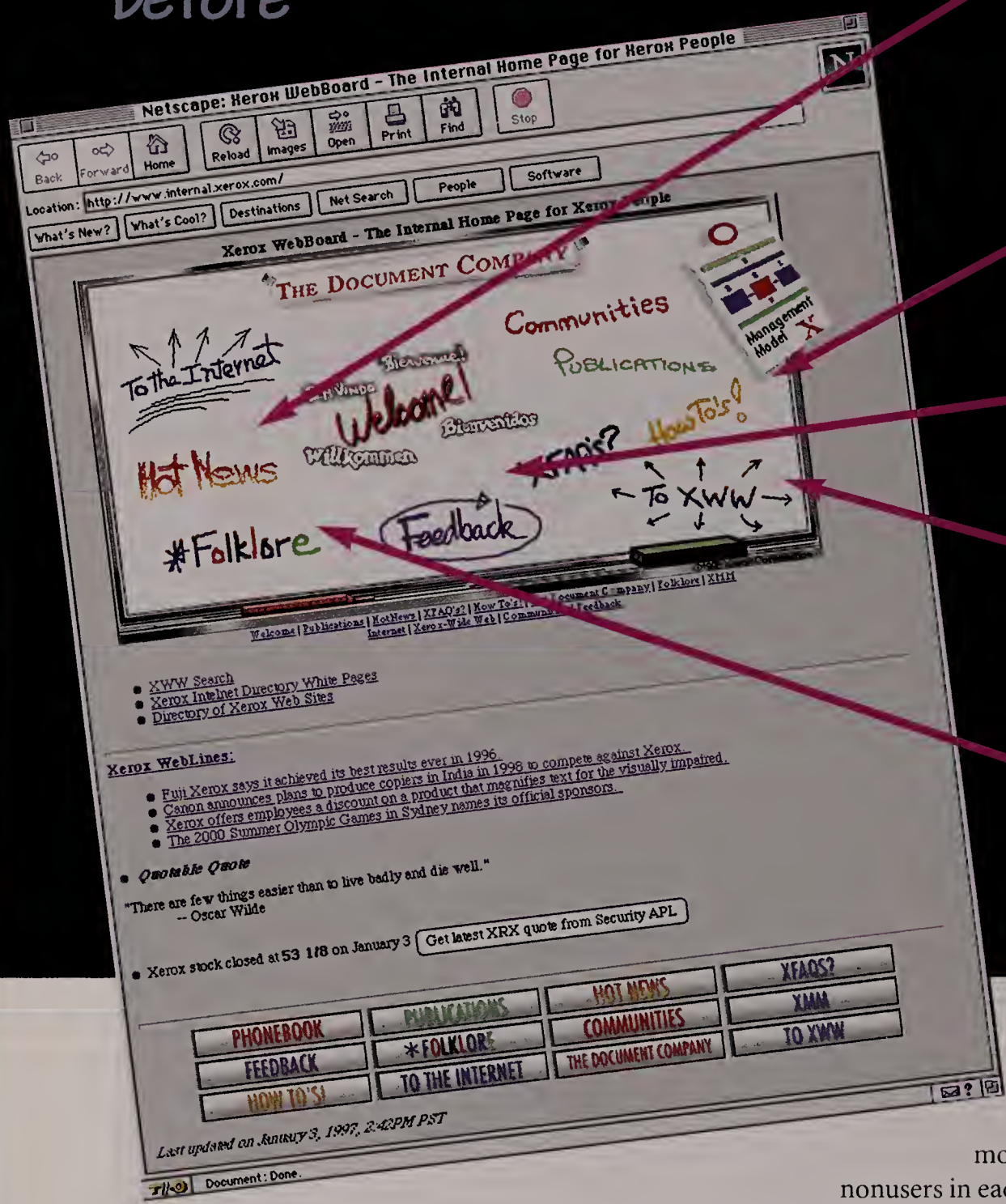
Cynthia Casselman, manager of strategic communications and an intranet development partner at Xerox, is trying to reduce the time it takes employees to find information on the company's "WebBoard." When Casselman started intranet development, she ran 12 focus groups and surveyed 1,500 Xerox employees to learn how they thought about, prioritized and categorized information. Armed with the results of those studies, she built a home page with 11 icons. (See illustration, Page 36.) But a year later, when the development group researched a redesign of the site, it found there was room for improvement. The 11 icons shrank to seven, with subjects like "Folklore" disappearing from the first page and the "Hot News" button becoming "News" and moving to the navigational bar.

While Casselman's home page once lumped all internal sites for business groups into a single category called XeroxWideWeb, or XWW, employees told her that it would be more useful if that designation were split into two: "Organizations" and "Communities."

Xerox Corp.

One major goal of the Xerox redesign was to reduce the time it took employees to find information.

before



1 "Hot News" is redundant because WebLines change daily to reflect news; change to "News" and move to navigation bar.

2 "Publications," "HowTo's," "XFAQ's," and "To the Internet" are seldom used; lose "To the Internet" and move the others off the home page.

3 "Feedback" option appears on whiteboard and in navigational bar below; remove it from whiteboard.

4 "XWW" label unclear; change to "Organizations" and "Communities."

5 "Folklore" icon has few users; move to a succeeding page.

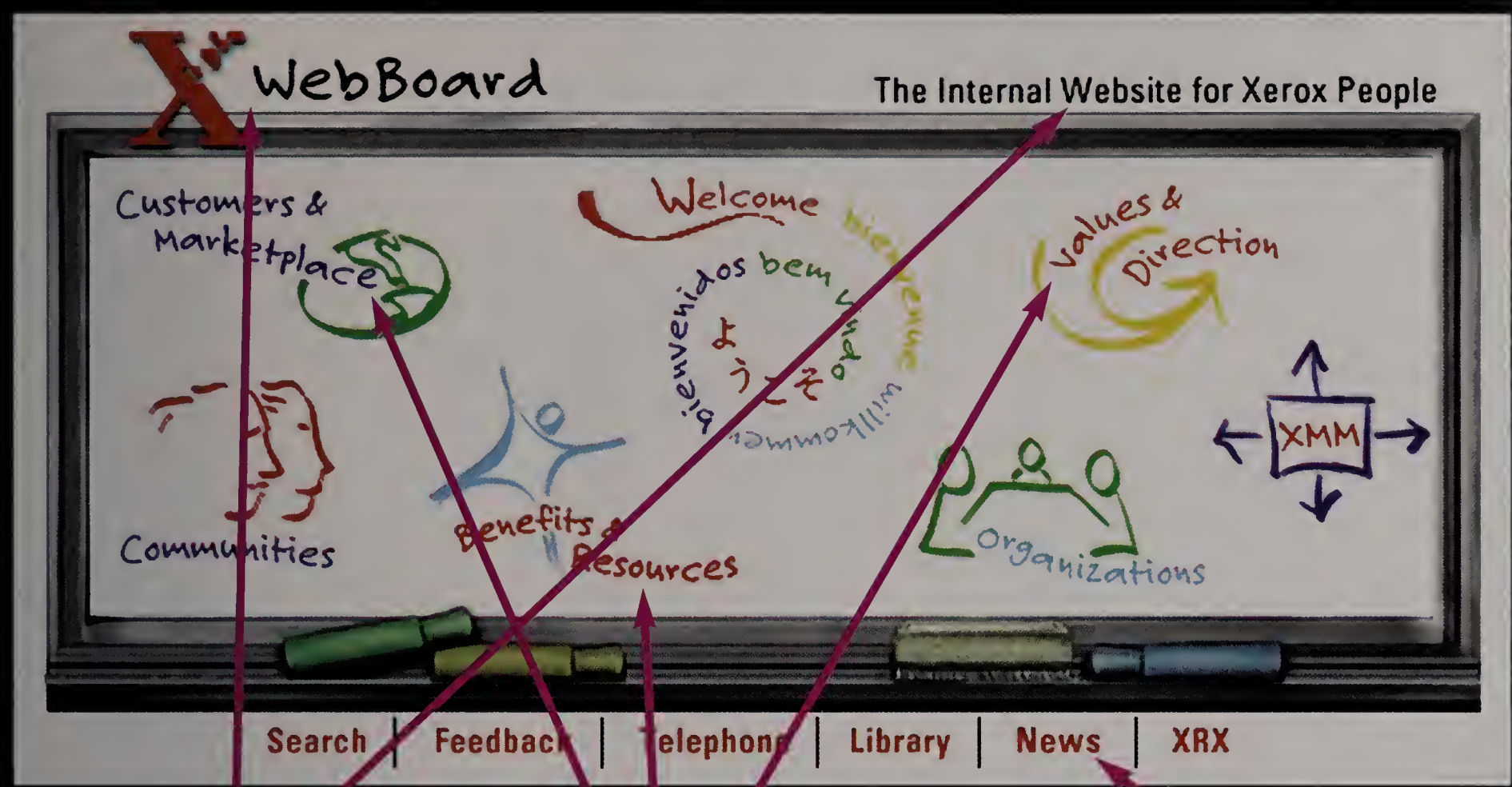
Casselman and her team also identified and plugged some big gaps in the information structure. For example, they created an icon called "Benefits & Resources" for an area previously called "You & Xerox" that contains human resources information such as administrative forms, benefits material and support resources. They also reorganized information into two other categories: "Customers & Marketplace," which combines external links to industry news, competitive intelligence and competitors' Web pages with Xerox's internal market information; and "Values & Direction," which focuses on the strategic direction and values of the company.

Casselman prefers to describe the category reorganization as fine-tuning rather than reconstruction. After all, she says, the information was all there; she just put it in better buckets. In fact, her team is still tuning. It recently ran four more focus groups with about a dozen users and nonusers in each, trying to gauge people's understanding of the icons.

Brian Curry, a consultant on information architecture and design in Netscape Communications Corp.'s Worldwide Professional Services group, recommends testing icons to learn what users think they mean before putting them on intranet screens. Sun's Nielsen, for example, discovered that the icon he thought represented one thing meant something quite different to Sun employees. "We have a category called 'Useful Links,' which is a source of internal and external Web resources," he says. "The icon was a link in a chain. We did usability testing, and this picture of a link turned out to have no communicative value whatsoever."

Nielsen's research identified another icon in the test group as a better vehicle to signal the links information. "It was a

after



6 Overline was not catchy; title has been punched up to XWebBoard and "Home Page" changed to "Website."

7 Focus groups revealed need for categories labeled "Benefits & Resources," "Values & Direction" and "Customers & Marketplace."

8 Navigation bar was hard to read and repeated options from WebBoard; content has been changed to distinguish it from that on the WebBoard.

picture of road signs pointing this way and that," says Nielsen. "We intended it to be an icon for [Sun] campus services, but every user we showed it to said, 'This means navigation,' so we changed it to a 'Useful Links' icon." (See illustration, Page 42.)

"The logic you use to design the interface has to be that of the target audience, not your own," says Harry Fenik, vice president of analysis at Zona Research Inc.(*www.zonaresearch.com*).

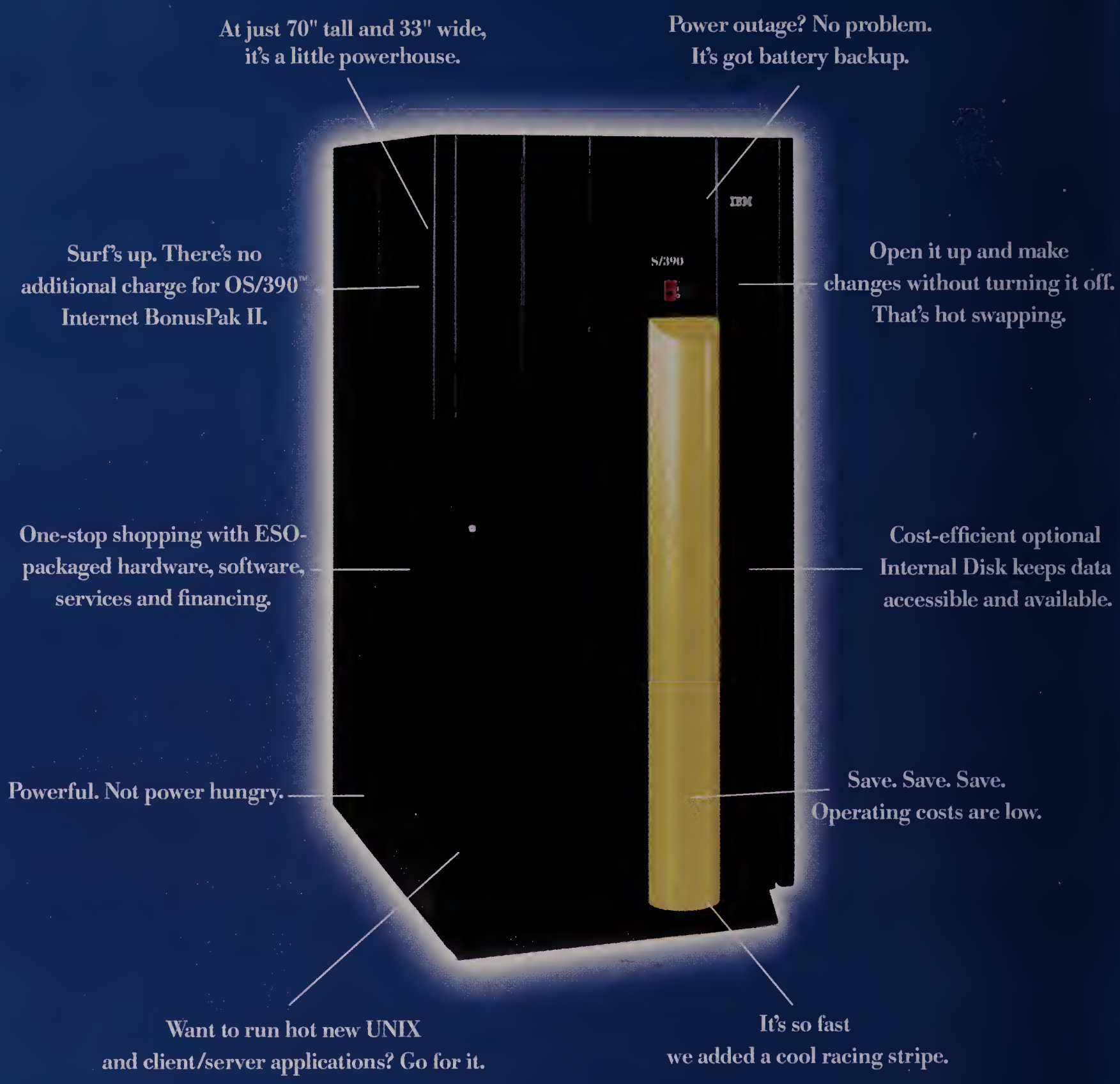
User interfaces can also provide what Fenik calls visual markers that orient users within a site. For example, marketing pages might have some small graphical element that appears in the same place on all of them, or they might stick to a specific color scheme.

But Fenik warns intranet designers to avoid falling into what he calls "development parochialism." He points out that different departments may think about the same information in very different ways. The solution, he says, lies in developers' ability to bundle information that appeals to users across the company while exploiting the intranet's ability to present information on an as-needed basis.

David Leveen, a partner in Cognitive Communications Inc., a management consultancy that specializes in intranet design, has come up against the same problem. And the same solution. He uses an HR benefits manual as an example.

"You could put up 250 pages of scrolling text," he says. In that case, many users would be soundly snoozing before they found what they were after. Or you could bundle information in scenarios. For example, "pressing a button called 'I'm having a baby' might bring up options such as adding a dependent, finding out about child care and maternity leave benefits or changing tax status," Leveen says.

Where a designer places information is crucial, says Mik Chwalek, partner in charge of knowledge strategies at Coopers & Lybrand LLP. But what information gets placed is even more important. Before beginning her redesign of



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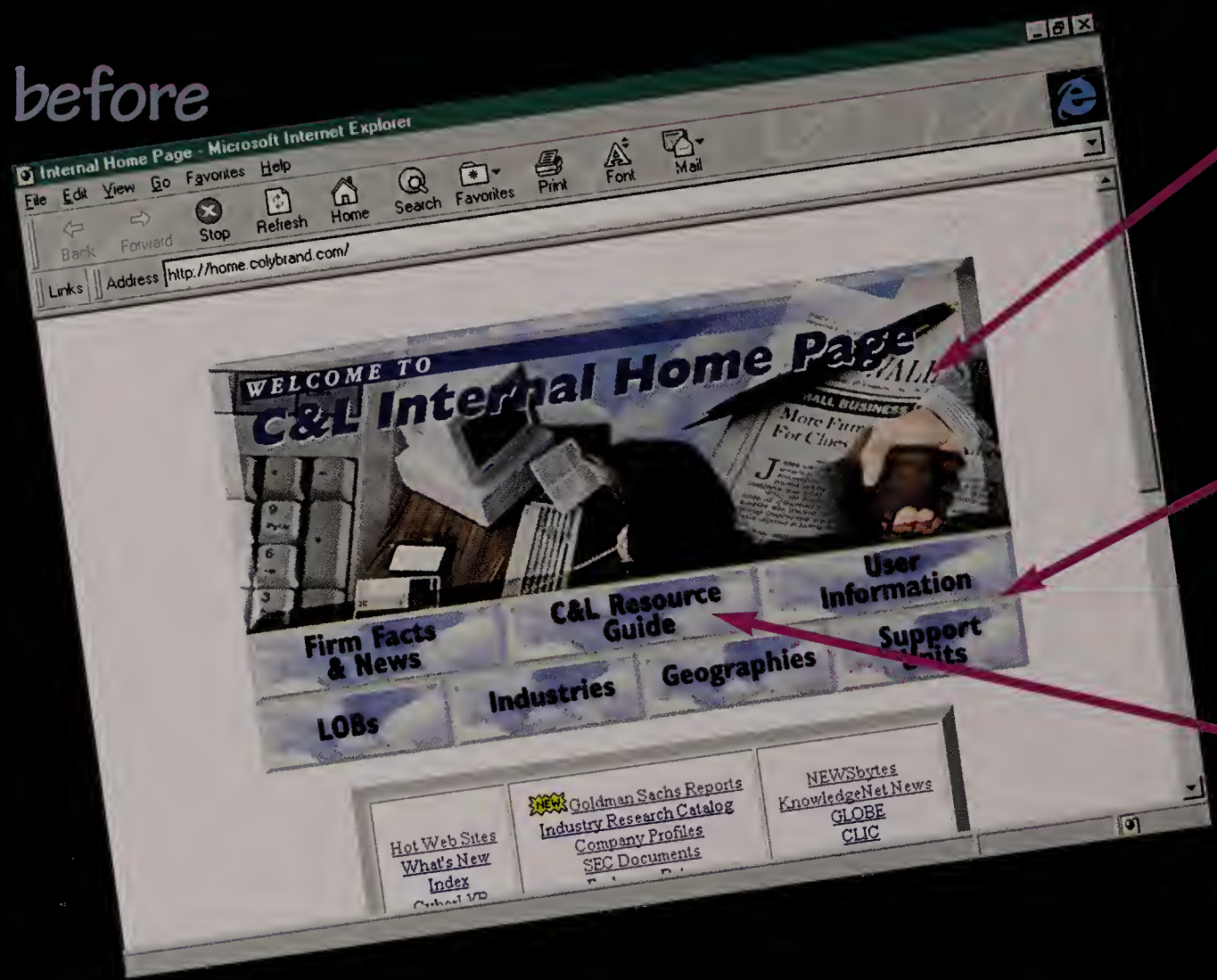
When Coopers & Lybrand's tests revealed that people think of information in different ways, the company built several routes to each intranet destination.



1 Too busy and confusing; simplify to graphic that sells concept of globalization and connectivity.

2 Typeface fades into cloud-design background; dump the clouds.

3 Navigational headings too wordy; condense them.

C&L's intranet, Chwalek was determined to find out what her users wanted. (See illustration, above.)

"We did a fairly extensive survey of more than 500 users, from clerks to partners," she says. "We asked questions like, 'What is it you need [content wise]?' and 'What's the frequency: every day, once a month, once in a blue moon?' Then we did the same thing with librarians and information professionals at C&L, asking what information is popular."

When her team put the two surveys together, the results validated its hunches. People at C&L, says Chwalek, need information about companies and industries: news, credit reports, Securities and Exchange Commission documents, financial statements and stock research. All of that is available on the C&L intranet, but because the company's 70,000 employees don't all look for the same information in the same way, Chwalek is careful to offer several routes (business, geography, map) to each destination. In addition, Chwalek is building what she calls "Michelin Guides" into the content structure to help people understand what's what and what's where. For example, someone wanting to find out about internal employee skills would use the intranet to access a Lotus Notes database containing that information. But he or she would simultaneously pull up a piece of software (the Michelin Guide) that summarizes what's in the database and suggests other places to find information.

"Our job doesn't stop when you get information to people," says Chwalek. "It doesn't stop until they've digested it as smoothly as possible."

EXPERTS SUCH AS Leveen and Randy Hinrichs, co-author of *Web Page Design: A Different Multimedia*, say an intranet's graphical interface not only is an important navigational tool but also serves as the front line for disseminating a company's goals and values. Unlike external sites, which present the image a company wants the world to see, an internal site can loosen

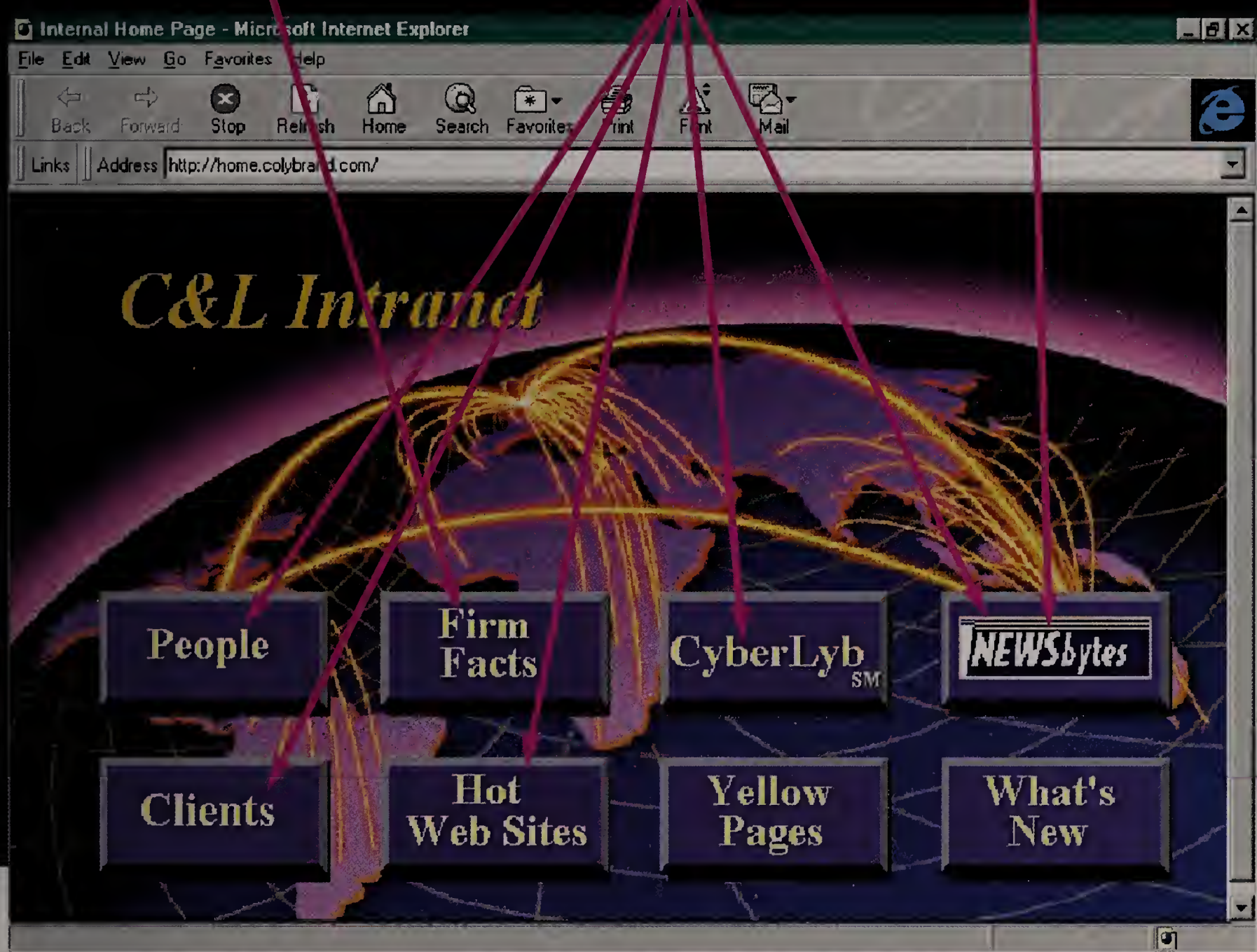
www.web-master.com/

4 "LOBs," "Industries" and "Geographies" were different routes to the same information; they have been moved down one level and combined under "Firm Facts" to show relationship.

5 "Hot Web Sites," "NEWSbytes," "People," "Clients" and "CyberLyb" were proven user favorites; they were moved to a more prominent position.

6 "NEWSbytes" retained the red, white and blue logo used in an earlier internal communications network to help brand-name and content recognition.

after



its tie and let down its hair, if that more casual attitude reflects the internal culture.

Xerox's home page, for example, uses the metaphor of a whiteboard, a ubiquitous tool in every conference room. The different informational elements are denoted by "handwriting" on the whiteboard.

"It's very simple and unsophisticated," says Casselman. "It features the people and culture as they really are rather than putting on a game face."

Sometimes user interfaces fulfill a less obvious purpose than reinforcing corporate culture. Many companies see their intranet home page as a conduit for disseminating strategic goals and missions. Says Leveen, "The entry point of an intranet speaks volumes about how you want users to think about the company that they're working for. You can use your design to reflect this."

For example, Xerox wants employees to remember that they work for a global company, so the center of the WebBoard says "Welcome" in several different languages. Users can click on any of those greetings and get a page of information in that language. Casselman says her team is hoping to have more extensive translation capabilities for other pages shortly. Meanwhile, she says, "this is a first step toward trying to be a global site." Such tactics are common on external sites; using them on the intranet helps reinforce internally the company's message to its customers.

BUT THE BIG CHALLENGE, intranet designers agree, is integrating all of the above: giving users the information they want, bundling it in ways that make sense and getting them to that information as quickly as possible. To do that, a designer must create

Sun Microsystems Inc.

Sun Microsystems' usability tests helped the company find icons that meant the same thing to the largest number of people.

before

1 Typeface too similar to external site logo; redesign to give intranet logo separate style and identity.

2 Type fades into background; move to bottom of page.

3 Star is unnecessary and looks weird; lose it.

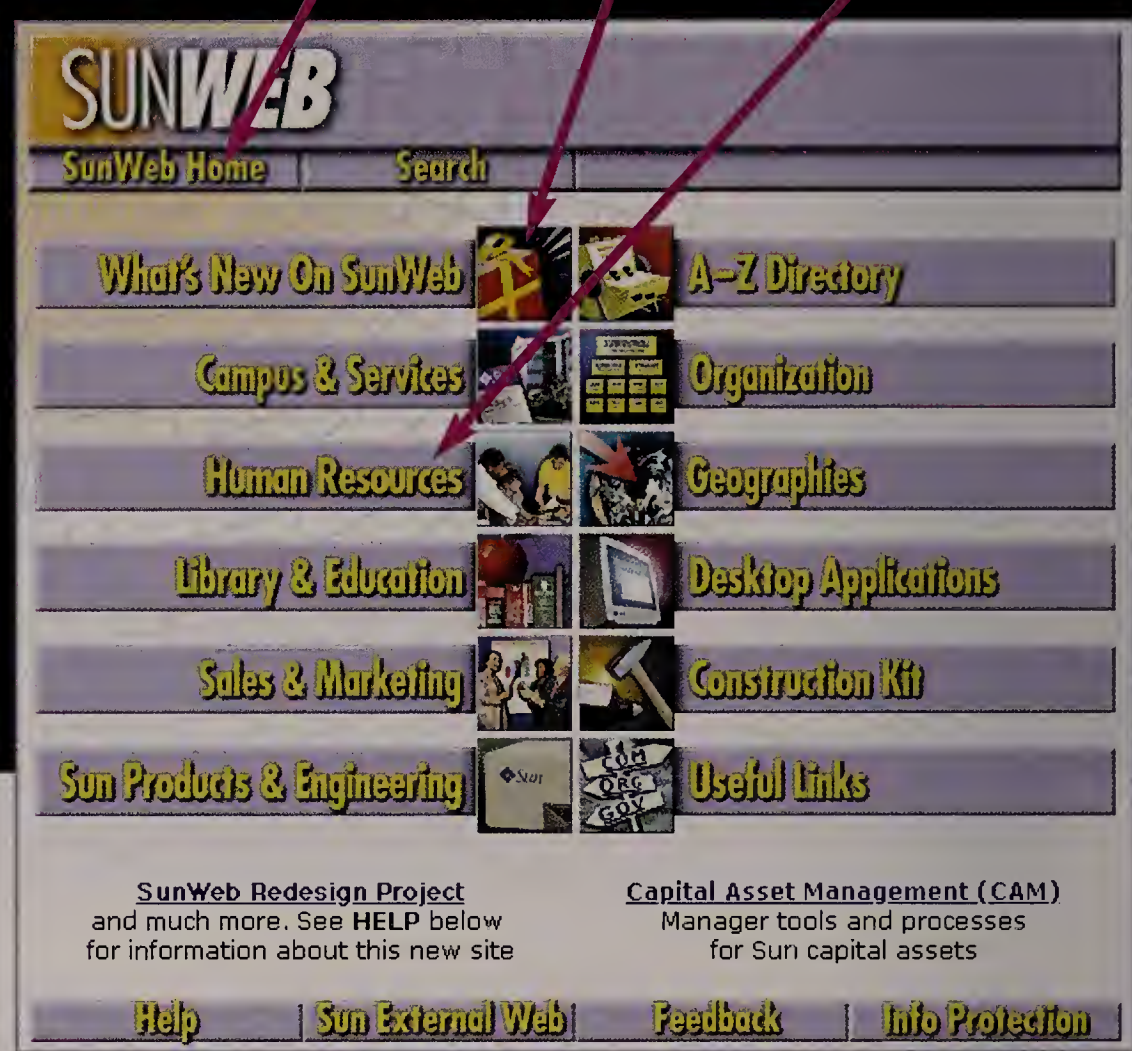
4 Feedback wording is unnecessarily long; lose "to Webmaster."

5 Type was too hard to read; pumped up drop shadow.

6 Icons that hadn't been usability-tested were replaced with those that had been tested.

7 Navigational headings that were unclear have been replaced with headings that say what they mean.

after



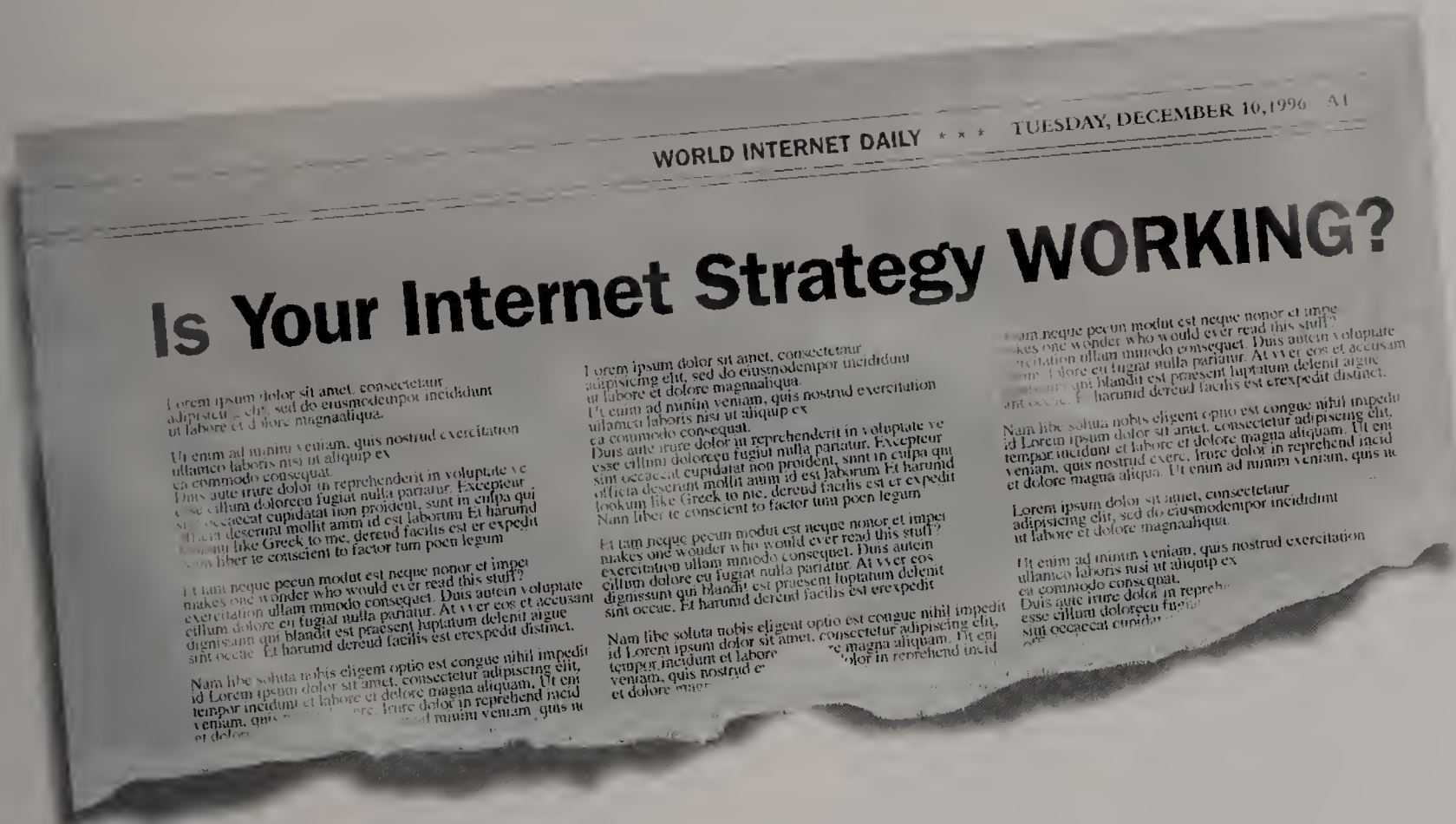
navigational pages that provide enough information but not too much information.

"Ideally, only two or three pages should lie between the user and content," says Leveen. For example, clicking on the "Legal" icon on the corporate home page will kick you over to the legal services home page and from there to the content pages.

C&L's Chwalek has a navigational goal of "two clicks and you're at the content place. We don't want people clicking and clicking submenus only to get someplace and have nothing there," says Chwalek, whose team is now building artificial-intelligence-based wizards to help navigate C&L's huge intranet. When wizards are working, she says, "people will type in the information they need and the reasons why they need it, and they will punch a button. It will be like an ATM—the wizards will just go out and get the information."

Finally, designers warn, "redesign" may be the wrong word to describe their efforts. Redesign, after all, suggests taking a completed project and doing it over. In fact, as intranets evolve technically and conceptually, it's possible that no project will ever be completed. Sun has designed its internal home page twice in the past two years. Xerox is finishing up round one, but Casselman cheerfully admits that they'll probably start over again as soon as this version is complete. "That's the good and the bad of this medium—you can constantly update it," she says. "We'll probably look at our design again in another year because changes are happening that quickly." WM

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.



Well, *is it?*

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SOCIAL STUDIES

"Community" is a warm and fuzzy concept from which business hopes to reap some cold, hard returns

LAST SUMMER, Ethan Zuckerman, vice president of research and business development for Tripod Inc., loaded up his Jeep and drove across the country, from Williamstown, Mass., to the Pacific Ocean and back. He had two objectives: to see the sights and to buy lunch for any Tripod member who would let him.

In three weeks, Zuckerman traveled 6,000 miles and broke bread with eight members of the company's Web-based service, which offers young adults such "tools for life" as investment advice, résumé builders and health tips. Zuckerman's motivation was as much to grab a working holiday as to put faces to some names and e-mail addresses. But the trip was also part of Tripod's larger strategy to meld its geographically dispersed membership into a community, one that will eventually offer regional get-togethers.

"The idea that someone you interact with over e-mail is able to show up in your town and buy Vietnamese food in front of the capitol is amazing," Zuckerman says. "It's still really hard to meet people on the Net. But there's something about showing up in a bar, a coffee shop or a restaurant that helps people keep in touch and build a lasting real-world community."

Two years ago, the only people likely to supplement online communications with face-to-face meetings were denizens of such subscription-based conferencing systems as The Whole Earth 'Lectronic Link (The Well) and Echo. One reason was those conferencing systems' geographic focuses: The Well centers on the San Francisco Bay Area and Echo on New York. Because of their regional scope, those services have been especially

BY HEATH ROW

ILLUSTRATION BY WARREN LINN

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W L

successful at encouraging social interaction and personal contact, frequently hosting parties and get-togethers where people can meet F2F and hear one another LOL.

The Web is another story. When developers boast of their sites' interactivity, most mean visitors' ability to interact with information, not with one another. But just as computers have changed in perception from computational workhorses to communication tools, so people are starting to look at the Web as a social phenomenon—a city with neighborhoods, not just buildings.

In a sense, that new emphasis on the social Web represents a return to origins. The Internet, as everyone knows, was born to serve a community of scientists and researchers, and online communities have routinely formed around common interests, shared experiences and the need to exchange information. Not surprisingly, such groups—which tend to be self-selecting and passionate about their concerns—are attractive to businesses, which would like to direct those feelings toward their own products and services.

For that reason, the word "community" is turning up in site descriptions and mission statements everywhere. Companies' goals include generating enthusiasm around products, tapping into customer concerns, testing new offerings, selling into existing communities and, in some cases, enhancing brand loyalty by making users feel a part of the business itself. "The interrelation between community and business is something that's going to evolve pretty rapidly these next few years," says John McCoy, vice president of business development for Electric Minds Inc., a Web-based conferencing system that focuses on technology and community. "The people online who really want to engage in business-related communities are looking for an opportunity to network and prospect for customers."

Some companies are doing that by slapping discussion forums and chat rooms on their sites where people can banter or by creating online marketplaces where they can barter. But those businesses whose constituencies have no compelling reason to congregate online or off are learning that simply offering a space to interact or sell stuff isn't enough.

It is people—not information, technology or commerce—who must be at the center of the Web and Web-based businesses, says André Durand, president and CEO of intranet and Internet developer Durand Communications Inc. Following that argument, several companies are using Durand's CommunityWare tool to build computer-mediated social groups and virtual communities based on people rather than content. The *Santa Barbara News-Press* site, Coastline, for example, unites the local business community via discussion forums and Chamber of Commerce notices. The forums and the Chamber represent pre-existing groups with pre-existing routines of interaction, but Coastline makes those interactions easier and more productive.

Tripod's customer base also represents a kind of community: twentysomethings leaving college and entering the real world. Most of Tripod's employees are part of that demographic as well and are thus in an ideal position to understand and cater to the needs and interests of their peers. The company is also exploiting another aspect of community by offering visitors ways to leave parts of themselves on the site, through a discussion forum, real-time chat and a personal home page service. Members' ideas, opinions and biographies represent their personal stake in the community; as a result, site traffic is up, and with it advertising and subscription revenue. "There's a reason to go back because *you're* there," says Bo Peabody, Tripod's CEO.

While communities are often hospitable to commerce, they are more than groups of customers, clients and business partners. Real communities on the Web are sustained by people who gather frequently because they want—or need—to be together, says Howard Rheingold, author of *The Virtual Community: Homesteading on the Electronic Frontier* (Addison-Wesley Publishing, 1993) and founder, publisher and chief creative officer of Electric Minds. McCoy agrees that the members of a community must feel the need to share information and experience if it's going to succeed. "There's an element of community that cannot be bought," he says. "People have to want to be there."

Electric Minds' business model doesn't just include community—it *is* community. Rheingold's goal is to build a community around the exchange of ideas about technology and what it means. "The Web is due for a transformation," Rheingold says. "The enabling technologies that we're now seeing emerge are just the enabling technologies. Next is the social use of those technologies."

In the month following Electric Minds' launch last November, more than 10,000 people from countries includ-

Founding Fodder

If you hope to foster a community, you'll have to get people to plant roots. Here are four things companies can do to encourage community online...

1. EXPLOIT EXISTING COMMUNITIES: Organizations that cater to specific professions or other groups that benefit from gathering offline may be able to replicate that interaction on the Web. The Scholastic Network, for example, links teachers, who generally work in isolation but need to share.

2. LEND YOUR SPACE: Tripod has increased return visits by giving members an opportunity to leave a part of themselves behind, in the form of a personal home page, a response to a survey or a comment in a discussion forum.

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ing Italy, Japan and Sweden registered to talk about technology, culture and community. Discussions spun off of interviews, articles and essays published by the Electric Minds staff as well as topics suggested by members. To encourage conversational tendrils to grow, the company seeded its site with commentary from leading technologists, futurists and humanists. That, Electric Minds hopes, will encourage the participation of other smart people who will in turn create their own insightful content and attract more visitors.

Rheingold says Electric Minds will also branch out into other media, producing segments for Ziff-Davis Publishing Co.'s ZDTV site on MSNBC and licensing material for a magazine and books. "We really want to show the faces of the people out there," he says. "We'd like to show real people who meet online and have some kind of community in the real world."

3. PLANT SEEDS: People will return often to your community if they know they will find valuable contributions from those they respect. Electric Minds seeds its conversations with noted technologists, futurists and humanists, who attract other smart users.

Electric Minds exists so that its members can share ideas that may or may not be relevant to their daily lives. Such pure communities are common on the Net in the form of Usenet groups and mailing lists, but they are rare among commercial Web sites, which are generally created to make—or save—money. (Electric Minds is currently supported by advertising and sponsorships from companies wishing to bask in its high-minded glow.)

Increasingly, however, businesses are looking to replicate online communities that gather in the real world for more prosaic reasons. Those communities may include groups, such as teachers, doctors and lawyers, who benefit professionally from networking and sharing information and advice. What do the host sites get out of that? An opportunity to provide a service for—and sell into—a concentrated, motivated marketplace. "In the professional world, if you can create [an online] community, users might be willing to pay you a great deal of money for providing that platform," says Paul McNabb, publisher and founder of the Cambridge Information Network, a subsidiary of Cambridge Technology Partners Inc. "You've almost created a channel."

Software company InterWorld Technology Ventures Inc. is in the business of helping organizations create such channels for their customers. InterWorld's software is used, for example, by Oncology Online, a Web site that creates a community of physicians who want to share oncology and hematology research and discuss treatments. The site is sponsored by the Fox Chase Cancer Center and owned by Medical Services Online LLC.

Then there's the Scholastic New Media division of Scholastic Inc., which moved its online community, including discussion forums and services for educators and students, from America Online to the Web last year. Using InterWorld's I-Chat and I-Note tools, Scholastic created the Scholastic Network, a subscription-based service that features curriculum-related projects, programs and learning games; bulletin boards; and a moderated chat environment for teachers of language arts, math, social studies and science.

John Lent, vice president and general manager of the Scholastic Network, says about 10,000 educators across the country have signed up for the service and use it to share stories and resources, swap teaching ideas and flesh out lesson plans. "Teaching is a remarkably isolating profession," Lent says. "[Teachers] start the day with 30 kids, and they end the day with 30 kids. There's no time built into their day for professional sharing."

Being associated with such a service obviously endears Scholastic to its constituents, who are also exposed to the company's marketing message. Most of the authors interviewed and curriculum plans used online are published by Scholastic, and Scholastic Place, the company's free Web site, features information about its books and book clubs. In addition, the company charges $199 for a year's subscription to the Scholastic Network (educators get a free 30-day trial), and it will consider selling books online as well. Still, Lent says, "we have a business model that's not about commerce. It's a network, a service and a community."

Users of Alumnet, a Web site created by the Virginia Tech Alumni Association, are motivated not by professional need but rather by loyalty and nostalgia. The service includes university information, reunion schedules, discussion areas and chats with guest celebrities and faculty members. RealAudio broadcasts of football games piped into chat rooms were discontinued after Alumnet's first year, but the service does feature RealAudio broadcasts of lectures and programs that originate in the academic community. About 3,000 of the university's 140,000 alumni have registered to use the site, says Tom Tillar, the university's vice president for alumni relations, although not all registrants are alumni. "Those who regularly use the site probably want to interact with alumni," Tillar says. "There is a sense of inclusion in the Virginia Tech community."

4. CREATE TIES THAT BIND: If your users' connections to one another are relatively tenuous—they drink Snapple or went to the same school at different times—offer opportunities for them to share in real-time events and common experiences online.

Like Scholastic, Virginia Tech has sound business reasons for its online community building. By encouraging alumni involvement, the school hopes to increase donations and

participation in university programs. But the site, launched in June 1995 as a pay service before changing to a free membership model, is still too young to have realized either of those goals. "We haven't really had this in operation long enough to determine that kind of benefit," Tillar says. "I would hope it will increase participation in and support of the university."

The material payoffs should appear as Virginia Tech and organizations like it make greater use of discussion forums, chats and other interactive features, says Mihran Aroian, vice president of sales and business development for Amicus Networks Inc., which developed and manages Alumnet. "The whole concept behind Alumnet is to keep open the lines of communication between alumni and between the alumni and their alma mater," Aroian says. "If, through the years, you've kept up with your friends and your alma mater, their ability to ask you for $25,000 is greatly enhanced."

Because the return on investment from Web-based communities is hard to pin down, most businesses are approaching them slowly. Indeed, many early experiments are no more than Net-based groupware for business partners. Even some companies that are famous for creating a community among their customers offline—Saturn Corp. and Harley-Davidson Motor Co. among them—have yet to exploit the social opportunities of the Web. Saturn, which invites its customers every year to a celebratory shindig in Spring Hill, Tenn., offers a searchable database of just over 9,000 Saturn devotees on its site. But the data is static, and there is little opportunity for interaction aside from e-mail links. Likewise, Harley-Davidson's site includes a hefty section about its Harley Owners Group and profiles of several Harley riders but no way for a motorcycle club to congregate online.

Occasionally, companies discover a way to let communities defray their own costs. Tripod's home page builder gives its customers a stake in the site and a feeling of place in its virtual world. But Tripod couldn't afford to offer the service unless it brought in some revenue. So Peabody and his staff asked the 45,000 members who then had home pages on the site if they would rather pay to use the service or have Tripod place ads on their pages. The members responded favorably to the latter suggestion.

Peabody says he was surprised by members' understanding of and concern for Tripod's financial situation. But "once they got the ads on their pages, they loved it," he says. "They felt like publishers." The move also strengthened users' sense of connection with the company itself. "Now whenever we have a [clear-cut business decision we need to make], we say, 'Why don't we just ask them?'" says Peabody. Tripod also keeps its members abreast of business decisions via a weekly e-mail newsletter that offers slices of office life, refers to employees by their first names and occasionally pokes fun at such things as its dealings with venture capitalists.

By bringing community members into the business and encouraging employees to participate in the communities they support, companies can gain the trust of potential customers more easily, Rheingold says. For now, Electric Minds is focusing on developing the sense of belonging and community, not a database of members or registrants that can be marketed to advertisers. "We're not going to get any information from our customers yet," he says. "We really have to establish trust. Once we establish that, we can ask them to give us their information."

Electric Minds is also trying to bring advertisers and sponsors into its clan by selling "participatory sponsorships." That means vendors can buy banner ads, but rather than link to a corporate marketing page, those banners might jump to an interview with a representative of the company—for example, Sun Microsystems Inc. President John Gage. There would also be a discussion forum where visitors can register to post messages and interact with the sponsor, ask questions about the company's technology and offer compliments or criticisms. By providing such a forum, Electric Minds is giving vendors an opportunity to interact with—and thus become part of—the community. At the same time, it holds advertisers up to members' bouquets and brickbats instead of giving them the go-ahead to shill away.

While some companies might not like the idea of making themselves vulnerable to criticism from a Web site's visitors, Rheingold says it can only benefit them. "The people who made the most money as 'sysops' on CompuServe were the people who ran the IBM and DOS chat groups," he says. "There's always a franchise for lively discussions." WM

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www.amicus.com

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www.ctp.com

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www.sbcoast.com

Durand Communications Inc.
www.durand.com

Echo Communications Group Inc.
www.echonyc.com

Electric Minds Inc.
www.minds.com

Harley-Davidson Motor Co.
www.harley-davidson.com

InterWorld Technology Ventures Inc.
www.interworld.com

Medical Services Online LLC/Oncology Online
medserv.com

Saturn Corp.
www.saturncars.com

Scholastic Inc./Scholastic Network
network.scholastic.com

Tripod Inc.
www.tripod.com

Virginia Polytechnic Institute and State University/Alumnet
www.alumnet.com

The Whole Earth 'Lectronic Link (The Well)
www.well.com

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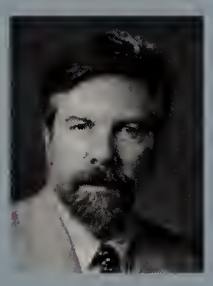

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FIELD REPORT

the Never-Ending Story

A Web site is like a city, and your job is to know every building, street and alleyway and keep them problem-free. All the time.

BY LINDA BRIGMAN

ILLUSTRATION BY RICHARD DOWNS

HERE'S A SITUATION most Web managers can appreciate: You get an e-mail from a colleague reporting that the URL for his site has changed from *www.isp.net/gadget* to *www.gadget.com*. Now that his company has its own domain name, he'd certainly appreciate it if you'd update your link to Gadget's home page. Sure, you reply. But privately, you're wondering, What link?

You don't really doubt that the link exists. But his form e-mail message doesn't specify the location, and you have no idea where it might be hidden in the 200 or 1,200 or 2,200 documents on your site. As you undertake the Herculean job of finding and fixing it, you decide once and for all that it's time to get a handle on site management.

Many of the tasks critical to your Web effort's survival, such as maintaining servers and ensuring security, fall under the rubric of site management. But those areas are so important that they will hardly be overlooked. It's the nit-picky things that can trip us up—the digital equivalent of filing. Making sure that every link works, keeping pages up to date, mapping and remapping the site as information is added, deleted and revised—all are detail-oriented, time-gobbling tasks. Still, however tiresome these chores may be, the ability to attend to them is what separates the professionals from the amateurs.

Among the finer points of Web site management, ensuring link integrity tops the priority list. Your site's credibility—along with your own—hinges on keeping pace with change, adding new links and updating existing ones. We all know that a Web page's life can be as ephemeral as a mayfly's. That URL you so confidently linked to last week may be gone today, a victim of site redesign, internal politics or the creator's whim. At least the *gadget.com* webmaster notified you about his company's new domain name; most would just let you figure it out on your own.

So regular link checks are essential. But how often is "regular?"

The answer depends primarily on your site's size. Reviewing links weekly or biweekly is probably sufficient for a 50-page site. However, sites with hundreds or thousands of documents may warrant checking daily, or at least two or three times a week. Automatic link checkers, such as Site Technologies Inc.'s SiteSweeper, can make the task much easier.

LINK CHECKING capabilities are also included in some of the commercial site mapping tools that are coming on the market. Site maps provide blueprints of relationships among all the content on a site, including text, images, links, forms, audio clips, video clips, Java applets and common gateway interface scripts. For site managers, a map is among the best tools for locating specific documents that might need purging or revising (such as that out-of-date price list you forgot to delete three months ago, the one that indexing robots still visit regularly). And because it improves organization, a good map serves a site's visitors as well.

Even the most basic site maps will reveal areas that need refining, such as pages that are obviously related but not linked or pages that were linked originally but should now be disconnected. A map can also help you determine where to place links when you're posting new documents. It can remind you, for example, that each division, as well as the corporate home page, includes links to product information and that therefore visitors should be able to find announcements of your new fur-lined oven mitts from those pages as well.

Site mapping tools take different approaches to representing relationships graphically. InContext Corp.'s InContext WebAnalyzer offers a big-picture view of a site, using icons to illustrate links, images, text and pages in concentric circles. Mercury Interactive Corp.'s Astra displays the same information in a hubs-and-spokes format. Others, such as NetCarta Corp.'s WebMapper, use hierarchical trees.

Not everybody buys into the benefits of electronic site mapping. One webmaster I know says his site map consists of paper and colored pens. The only real disadvantages to this approach are that he can't put the maps on his Web site and that he's running out of wall space for hanging them.

Despite their crowded schedules, Web managers should take time to search out and evaluate new site-management tools. (I conduct my own evaluations monthly.) And while no one has come up with a tool that solves all my site management problems, in the course of my research I've discovered a few products worth recommending. Many are freeware and shareware that webmasters themselves have written or customized to fulfill their own requirements. They include CyberSpyder by Aman Software and SiteMap, a nifty beta tool produced by software developer Dubravko Kakarigi.

Although home-grown tools—your own or those available online—may fit your needs and budget, they lack support and are unlikely to be improved and refined as quickly as their commercial brethren. And while I can write a line or two of code, any link checker or site mapping tool that I create could potentially turn into the Program from Hell, bringing my own Web server (and maybe those of any sites to which we link) to its knees.

OF COURSE, link integrity, site mapping and related technology tasks are only the tip of the iceberg in Web site management. The other 90 percent, invisible to anyone outside your organization, involves human accountability. Who has the authority to change content? Who is responsible for seeking out obsolete pages still on your server? How often is somebody indexing your site so that a search brings up only current material?

And what happens if your webmaster just doesn't show up one day? Can her replacement figure out the structure of your site with less than three months of orientation? The most recent link checker report and an up-to-date site map can go a long way toward making such transitions easier, if not painless. Beyond that, though, it's critical that more than one person involved with the site know the status of its parts and understand how everything works.

The importance of spreading site process expertise among several people came home to me recently when I was unexpectedly forced to be out of the office

for several days. While there were guidelines in place for testing new pages prior to moving them to our production site, I had never taken the time to carefully document them. After all, I was the only one who ever used them. No major problems cropped up during my absence, but had my replacement not understood the approval process, I could have faced a nightmare upon my return. You can bet that documentation will be in place before I'm out of the office again.

By the way, remember the changed link that started this discussion? Turns out it isn't broken yet: The *gadget.com* webmaster built a redirection link, rendering your link checker useless. Still, if you've indexed your site this week, as I'm sure you have, you shouldn't have any difficulty finding it. Right?

Linda Brigman is the webmaster at Research Triangle Institute in Research Triangle Park, N.C., and the author of Web Site Management Excellence *(Que Corp., 1996). She can be reached at* lgb@earthlink.net.

CASES IN POINT

WEBSYS

A Governing Principle

Web Integration Systems Inc. (Websys) is doing its bit to restore the public's faith in government, or at least its faith that government Web sites will be up to date and functional. The Web design and management company's clients include the General Services Administration's IT policy group, which has 25,000 documents online, and the Internal Revenue Service, whose site contains nearly 3,000 pages.

Chris Skinner

Both agencies produce their own content, but Websys manages and maintains their sites. The arrangement isn't without problems, some of which arise because the agencies can change content without going through the outsourcer. Usually, they make changes on an internal staging site, which Websys reviews before it goes live, says Chris Skinner, the company's co-owner and vice president of IS.

"But they can bypass us," says Skinner. "And they have done that on occasion," leaving Websys scrambling to fix broken links and image tags.

For that reason, Skinner says, he tries to build flexible, modular sites so that clients can tinker with content in one section without affecting others. To do that, he uses templates and an in-house tool that allows users to insert new material, such as an update to an events calendar. Websys developers also use tools that permit them to stamp items with automatic expiration dates or to perform updates by e-mail.

In addition, Skinner builds human links by assigning a Websys account representative to each section of larger sites (smaller sites have a single rep) and by urging the agencies to appoint their own contact people for each section as well.

The other part of Websys's strategy is defensive. "We do a lot of backups," says Skinner. That way, if an IRS or GSA employee deletes something on the staging server that needs to be restored later, it can be retrieved.

In addition to dealing with any havoc its clients might unintentionally wreak, Skinner's group maps and diagnoses problems on

> "I have seen way too many people that have a search engine on their site that hasn't been updated in months." *–Chris Skinner*

the sites using InContext Corp.'s InContext WebAnalyzer. The mapping, checking and reporting tool lets the Websys team take an aerial view of an entire site mapped in concentric circles. It also lets the team view only links or only files, which are sorted by date last modified, type, size and other criteria. Skinner says he finds WebAnalyzer useful for locating "orphan files"—documents that exist in directories but are no longer used regularly, such as last year's tax documents.

External links are also on the Websys agenda. Skinner regularly checks to see that referring pages link to the appropriate locations on the IRS and GSA sites. Using WebAnalyzer to track the external links allows him to notify webmasters at other sites that the page location or information has changed. He also screens for erroneous or inappropriate links and sometimes checks Internet search engines for references to the sites. For the IRS, most external links come from accounting firms, but Websys finds the occasional malicious referral as well. Websys also uses a complicated logging system to help track down senders of hostile or threatening e-mail that comes through the IRS site.

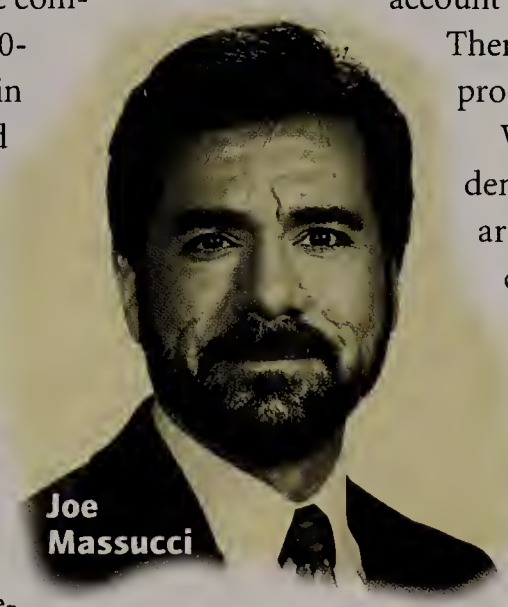
The most common management problem, Skinner says, is failure to maintain a site's search engine. " I have seen way too many people that have an engine on their site that hasn't been updated in months," he says. As a result, either users can't find anything or they find everything, including a lot of irrelevant and outdated material.

> "When I came here I didn't know how large the site was, the kind of volume it got, the number of links on each page, the number of external links or how many there were overall." *–Mark Vivanco*

AMOCO

The Bigger They Come

When it comes to managing Amoco Corp.'s intranet, the statistics alone are enough to make most Web teams run for cover. "It's a worldwide company with 35,000-plus employees in 40 countries and servers all over the world," says Joe Massucci, a communications consultant for IT and a member of Amoco's global intranet management team. Some 15,000 to 20,000 people access the intranet regularly via Netscape browsers, says Massucci, and that figure will grow rapidly in 1997 as the company completes its cost-cutting shift to a distributed, standardized computing environment.


Joe Massucci

The size of the intranet is as daunting as the scope of its audience, with tens of thousands of pages online. And to make the site's management even more trying, just about any Amoco division anywhere can add new links or pages at any time. And they do. "It's very decentralized," Massucci says. "It's up to the business unit that puts up a site to start the account and manage it. There's no approval process."

While highly democratic, that arrangement keeps corporate intranet managers awake at night worrying about obvious issues such as inconsistency in content, style, organization and navigation as well as how local business units physically manage and maintain their sites.

For that reason, the company created a central intranet management team to set enterprisewide guidelines, provide

tools and establish a monthly check of every intranet page worldwide for technical problems. From a business standpoint as well as a technical one, the team's work is mission-critical.

"If we can't share the knowledge base, if we can't share information, that's definitely going to impact productivity and affect our competitiveness," Massucci says. "The more time you spend looking for something on Amoco's intranet, the more productivity is lost"—and that's the antithesis of the intranet's intended effect.

With that in mind, the team's top priority is, in Massucci's words, "weeding out the garbage": managing links to give employees everywhere an easy, direct, unencumbered path to the most current information. But that can be a challenge in a company of Amoco's size, where on any given day dozens of employees quit, go on leave or transfer, leaving active pages behind.

The team's first step toward asserting order was ensuring that each page had an owner, a contact name and a highly visible "freshness" date, fixed in a standard place wherever possible.

The team also licensed Netcarta Corp.'s WebMapper, which it uses to search out pages that haven't been updated in several months. Then "we'll send the owners of those pages a note [saying], 'Is this a valid site? If not, remove it—or we'll remove it for you,'" Massucci says. If there's no response, the pages come down.

During site reviews, the team also uses WebMapper to find broken links, duplicate files and pages with overabundant or oversized graphics that take too long to load. It alerts page owners to those problems as well. Earlier-generation tools detected many of those situations but required site managers to track and make changes by hand, one page at a time. Now managers can automatically fix not just the problem link but also related links on other pages and in subdirectories, archives and elsewhere.

Massucci uses the NetCarta software to map both the entire intranet and individual sections of it. Using spider technology, WebMapper creates a color-coded diagram that resembles an organizational chart, with icons that represent various elements and highlight broken links, mammoth image clusters and other problems. The tool can show just the top layer of pages or burrow deeper.

Massucci says he finds WebMapper useful for zeroing in and generating reports on particular problems. "You can say, 'I just want to see the pages of broken links,' and it shows you the report in HTML pages," allowing the tester to click on the link to jump to the troublesome site, he says. "Or you can say, 'Show me every page with a graphic over 30K or every page with more than three graphics.'"

Even with mapping, link checking and reporting tools, "there's still a lot of growing pains," Massucci says. "But I see that shaking out as the tools themselves become better."

FINDING IT ONLINE

Aman Software
www.cyberspyder.com

Amoco Corp.
www.amoco.com

InContext Corp.
www.incontext.com

Mercury Interactive Corp.
www.merc-int.com

Merrill Lynch, Pierce, Fenner & Smith Inc.
www.ml.com

NetCarta Corp.
www.netcarta.com

Research Triangle Institute
www.rti.org

SiteMap
www.applicom.com/software/sitemap/

Site Technologies Inc.
www.sitetech.com

Web Integration Systems (Websys) Inc.
www.websys.com

MERRILL LYNCH

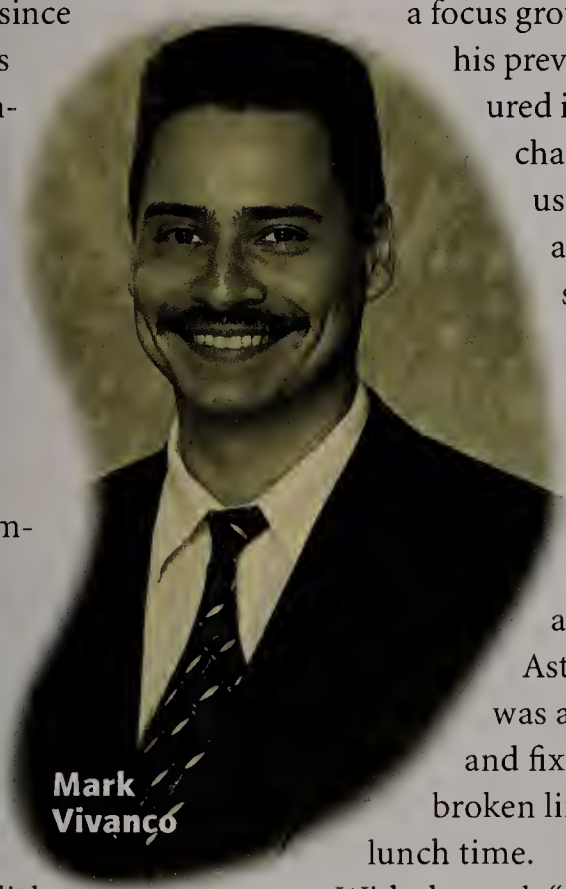
Starting Over

When Mark Vivanco took over management of the intranet at the Tritech Division of Merrill Lynch, Pierce, Fenner & Smith Inc. in October 1996, he inherited somebody else's headache. And that somebody was no longer around to answer questions.

"When I originally came to this location [from the Dow Jones Telerate Inc. financial information service], I didn't know how large the site was, the kind of volume it got, the number of links on each page, the number of external links they had or how many there were overall," says Vivanco, the only employee working full time on the 160-page intranet for Tritech, a printing division of the giant financial advisory company.

Managing internal links can be a challenge in a company where on any given day dozens of employees quit, go on leave or transfer, leaving active pages behind.

Because the site had been sitting untouched since his predecessor's departure for another job, Vivanco worried most about updating links between Tritech and about 150 other intranets throughout the Merrill Lynch empire. At first he tried manually hunting down broken links. "I sat down and was trying to get a feel for the site. I'd click on the links, see where things were going to," he says. It took nearly a week of flying blind before he located most of the problems. He also tried tackling the job with a self-written program and with various shareware products but couldn't find one single product that could handle all the tasks he needed to undertake quickly to upgrade the site.


Mark Vivanco

Vivanco then decided to beta test Mercury Interactive Corp.'s new Astra management tool, which he had heard about during a focus group meeting at his previous job. "I figured it was a good chance to learn to use the product and map the site at the same time," he says.

The first benefit—time savings—became apparent immediately: Using Astra, Vivanco was able to find and fix a batch of broken links before lunch time.

With the tool, "you can see every location that references that bad link," Vivanco says. Having located all the problem references, he now goes through and changes each manually—or does a global search to replace them.

The tool also provides a blueprint of Tritech's Web site architecture on a single screen, giving Vivanco his first macro-glimpse of the previous site manager's structuring theory. Astra's Dynamic Scan feature maps not only static links but also dynamically generated pages, such as those linking to databases or real-time information sources, like the external weather maps used to provide local weather reports for all Merrill Lynch locations.

He can also view the site object by object, zeroing in on a particular application. For example, Vivanco says, he knew the previous webmaster had used Java on the home page, "but I didn't know how many other pages were using it." Using Astra, he was able to locate all the other Java applets on the site.

But Vivanco's top priority remains checking all of the site's links daily. "The initial thing any administrator has to do is fix broken links because it's a reflection on you," he says. "The content isn't a reflection on you. But the links are." WM

Senior Editor Anne Stuart can be reached at astuart@cio.com.

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In the spirit of recognizing comparably groundbreaking Internet and intranet development efforts, we at **WebMaster** Magazine have established the **WebMaster 50/50 Award**. We believe there's a surprising amount of distinguished pioneering work represented among the business sites that now dot the early Web. And we want to unearth it, honor it, write about it, inspire others to imitate it.

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In August, we will devote our entire issue to celebrating the 100 initiatives—50 intranets and 50 Internets—that most clearly represent the benchmarks, circa 1997, of business excellence on the Web. We know you're out there. We just need you to tell us what you're doing.

And maybe eventually, decades from now, people will look back on the mid- to late 1990s as the Golden Age of the business Web.

Regards,

Lew McCreary
Editor-in-Chief & Publisher
WebMaster

EVERY WEBMASTER KNOWS THAT NOTHING IS MORE IMPORTANT THAN CONTENT. EXCEPT WHAT YOU DO WITH IT. **BY MATTHEW CUTLER**

King of the Highway

The statement "content is king" is important for two reasons. One: It was the first bit of popular Web wisdom to achieve cliché status. And two: despite the growing emphasis on cool technologies, it is still absolutely true.

But for content to remain king of any particular Web site, many people must work behind the throne. Like most Web team activity, content generation involves participation from across the enterprise. Specific team members—such as dedicated Web editors, content managers or marketing domain experts—may be chiefly responsible for populating the site. But content creation, harvesting and preparation may be the responsibility of almost anyone.

The quantity and diversity of content creators in a company reflect the quantity and diversity of content types that are possible on the Web. Content can be isothermal maps from a weather service or grandma's no-longer-secret recipe for rice pudding. It can be a company's latest catalog or the price that a ton of haddock is fetching on the East Coast. It can be an audio lecture, a video demonstration or a virtual reality tour around the corporate weight room. And it can come from many sources, inside and outside the organization.

How does the Web team get content? In the fine tradition of newspaper reporters, any way it can.

A couple of years ago, much of the content on the Web was "repurposed"—lifted wholesale from another medium, most likely print, and posted on the site. At a time when most managers agreed to field Web sites only if pages could be cobbled together from materials on-hand, repurposing was a good way to squeeze extra mileage from existing resources. This tactic worked reasonably well for text that was short, instructive or intended to communicate lots of information in a little space ("Five Safety Tips to Keep in Mind When Cleaning Gutters," for example). Most important, the input required from the Web team was negligible: All someone had to do was gather the organization's most recent publications and toss them at the person doing HTML conversion.

The result, in many cases, was like putting *Seinfeld* on radio. The jokes were still funny, but people sensed that the experience could be richer.

Web teams soon realized that most content would need some alteration if it were going to fit comfortably on a site. Straight repurposing of a long piece of text results in an imposing scroll that is uninviting to many readers. And because people reading on the Web tend to have shorter attention spans than people reading print, uninviting can be dangerous. There are, after all, plenty of competing Web sites just a click away.

With that realization came the need to assign someone on the Web team—ideally the most editorially adept—to do a *Reader's Digest* job on incoming content. The early Web editors were, by necessity, self-taught, but in the last two years some rules of thumb have evolved for people grooming text for online presentation. For example, while short and long are relative terms, it's safe to draw the line at 2,000 words or so. It's usually easy to chop a long piece of prose into more digestible nuggets—on the order of 500 words—with links from the end of one section to the beginning of the next. Where long

Part 4

CONTENT CREATION

This is the fourth in a seven-part series of articles in which Webmasters' Guild President Matthew Cutler discusses the tasks and responsibilities of the webmaster function.

WEBMASTERS' GUILD

ILLUSTRATION BY SCOTT MENCHIN

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content elements cannot be cleanly subdivided, for reasons of clarity or copyright, the technique of progressive disclosure is often advisable. Progressive disclosure presents short bursts of descriptive content with links that allow the user to click further to retrieve more complete information.

It's also helpful to begin each section with a descriptive headline, cluing readers in to what will be discussed and giving them an opportunity to bail out if the subject holds no interest. Some content managers even post the number of words at the beginning of each piece so readers won't find themselves embarking on a multiscreen epic in the minute and a half between the end of lunch and the beginning of the first afternoon meeting.

Web editors may also need to do some creative writing—or rewriting—to ensure that the message matches the medium. The Web "voice" is normally described as being direct and conversational and, ideally, as possessing that indefinable something called "attitude." The emphasis on attitude—usually characterized by informality and a degree of irreverence—springs from the relatively youthful culture of the Web as a whole. But corporate Web editors should be careful that in conveying attitude they do not run afoul of their company's carefully honed image or of the tastes of its customers.

But content managers must be able to do more than simply boil down, spice up and chunkify text. Most will also have to act as graphics and multimedia editors, determining not only what nonprose elements to display on a site but also how and where to display them. On a printed page, an image—a chart, a map, a satellite photograph of Cleveland—is there in all its glory whether or not the reader cares to study it. But on the Web, users may be given the option of viewing an image, and that in turn presents a number of options for the people maintaining the site. They can choose, for example, to place an image directly on a Web page, where it will be seen by all but where it will also slow delivery. Or they can link to the image so that it is seen only by those who seek it out. Or, in what may be the truest exercise of editorial privilege, they can keep it off the site entirely.

Straight repurposing, in many cases, was a little like putting Seinfeld on the radio. It worked, but not as well as it should.

THE SECOND-MOST overused expression about the Web is the admonition to "keep it fresh." The dynamic nature of the technology dictates that things must change because they can: not just information that varies minute to minute (stock prices, traffic conditions, weather) but also industry news, white papers, articles, entertaining tidbits and promotions cooked up just to give visitors a reason to return. But while the ability to present constantly changing information is one of the Web's greatest strengths, it is also one of its biggest pains in the neck. To cope with the challenge, content managers must put in place a strategy for updating material, either assigning that responsibility to individual content owners or handling it themselves.

Content managers must also work closely with the Web team's technologists to deliver what many consider the Holy Grail of the Internet: customized content. The focus of Web-based one-to-one marketing efforts so far has generally been on the software tools that allow personalization to happen. But while programmers may make it possible to deliver specific information to women over 50 who play golf, for example, it is the content manager's decision as to what that information will be. The benefits of narrowcasting are also its burden: Someone will have to create copy for as many different slices of the customer base as the software tools can identify.

When you think about all these responsibilities, it is not surprising that content managers—like their colleagues in technology and design—are starting to look for help from outside. Some companies are following the example of newspapers by hiring freelancers or stringers who generate material for their sites. Others are buying or licensing content from external sources: a series of columns from a trade publication, say, or an industry-specific newsfeed from a major news service. Whatever the source of this material, it is the content manager's job to ensure that the company has the right to reproduce it.

Readers will have noticed that most of the aforementioned issues have traditionally bedeviled the publishing industry as well. In fact, companies would do well to recognize that, in the process of fielding a Web site, they have become publishers themselves. And what is the credo of all publishers, from the smallest community paper to *The New York Times*? Content is king, of course. WM

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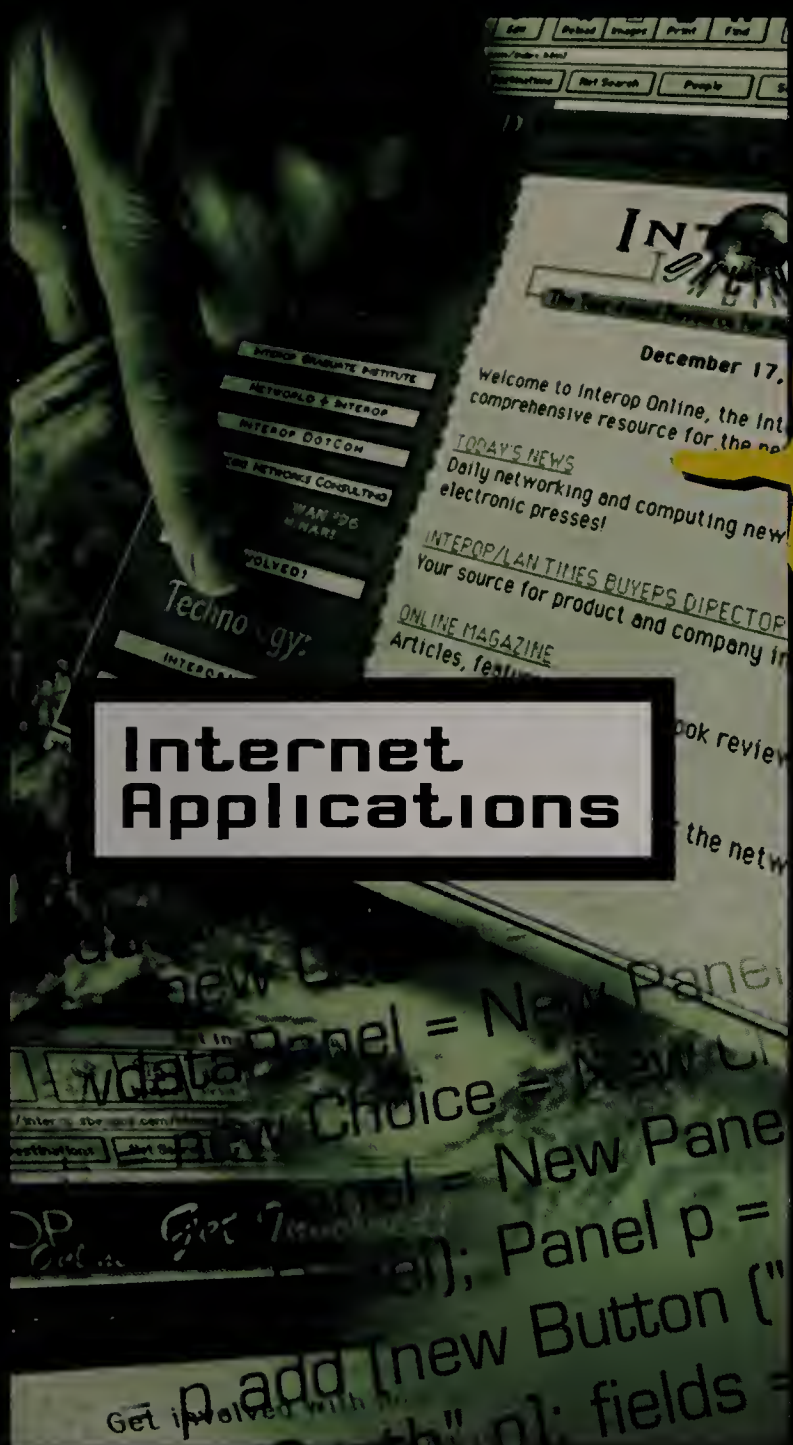
*Matthew Cutler is president of The Webmasters' Guild Inc. (*www.webmaster.org*). The Guild is a nonprofit organization dedicated to educating, promoting and unifying the global webmaster community. Cutler is also a founder and director of business development at Net.Genesis Corp., a provider of Web performance and usage analysis software (*www.netgen.com*). He can be reached at* mcutler@webmaster.org *or* mcutler@netgen.com.



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INTERNET SECURITY

intel inside
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HALT! WHO GOES THERE?

WebStalker may sound like the monster in a Wes Craven movie, but it is really a force for good. The product, from Haystack Labs Inc., promises to slap intruders away from your Web site before they have a chance to do any mischief.

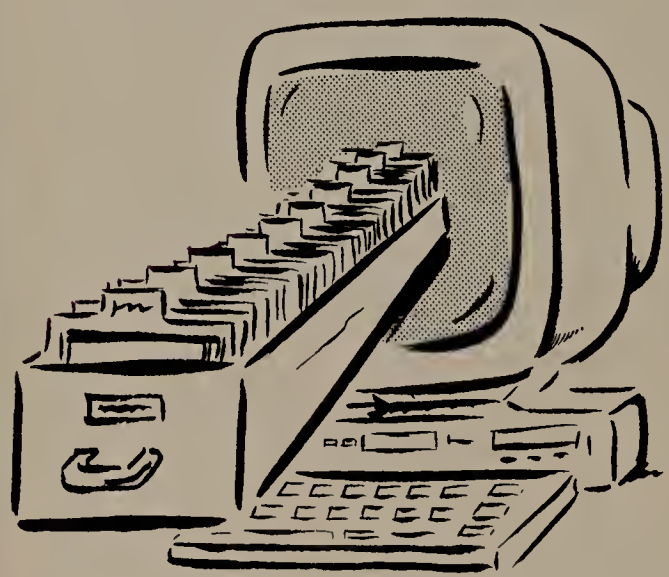
WebStalker walks a webmaster through a series of questions about access in order to create a customized security policy for each organization. It then patrols the perimeter of the site, watching all processes, cutting off abusive connections as they occur and sending alarms detailing suspicious activities. Because intruders are interrupted before they can do much hacking or cracking, the webmaster needn't waste time reconstructing damaged links or replacing altered HTML or graphics files. In addition, every time WebStalker catches someone who is up to no good, it produces a report detailing who did what, when, where and how, eliminating the need to comb through voluminous log files in search of answers.

WebStalker currently is available for Sun Microsystems Inc.'s Solaris, IBM Corp.'s AIX version of Unix and Microsoft Corp.'s Windows NT. For more information, stalk on over to *www.haystack.com* or call 512 918-3555.

IT'S WHAT'S INSIDE THAT COUNTS

Despite the ungodly amount of information available on the Net, the vast majority of data needed by most corporations resides within their own computers. With that in mind, Digital Equipment Corp.'s AltaVista line is trying to make the desktop as easily searchable as it has made the Web.

The pithily labeled AltaVista Search My Computer Private Extension is part of Digital's plan to disseminate its popular brand within organizations. Users can automatically build a full word index of all HTML files and more than 200 other file types—including applications from Microsoft Corp., Lotus Development Corp., Corel Corp. and Qualcomm Inc.—stored on local PC and shared network drives. Using the same browser interface and technology as the Internet search service, the tool can find and rank documents, files, e-mail messages and attachments containing selected search terms. Clicking on an item in the AltaVista index automatically opens the document and its launch application; the index is stored locally, so users can search even when they're not hooked up to the network.



Search My Computer Private Extension can be downloaded from *altavista.software.digital.com.* For more information, call 800 336-7890.

AS IT HAPPENS

Until recently, most of the live video applications available online fell under the category of stupid Web tricks: "Come see the view from our CEO's window"; "Click here to witness my cat asleep in her basket."

But organizations are recognizing the value of letting Web users check traffic conditions, monitor quality control at manufacturing plants or keep an eye on the store while the owner is vacationing in Bermuda. To help them, Perceptual Robotics Inc. has introduced InterCam, a tool that delivers live video over the Web via a telerobotic camera. What makes the product especially interesting is that users can control the view, zooming in or out and selecting parts of the scene that interest them.

Built around an IBM-compatible PC running Microsoft Corp.'s Windows NT, InterCam also runs on Unix. To try it out, zip over to *www.nethomes.com/intercam* or call 847 475-0512. WM

ILLUSTRATIONS BY JOHN CLARKE

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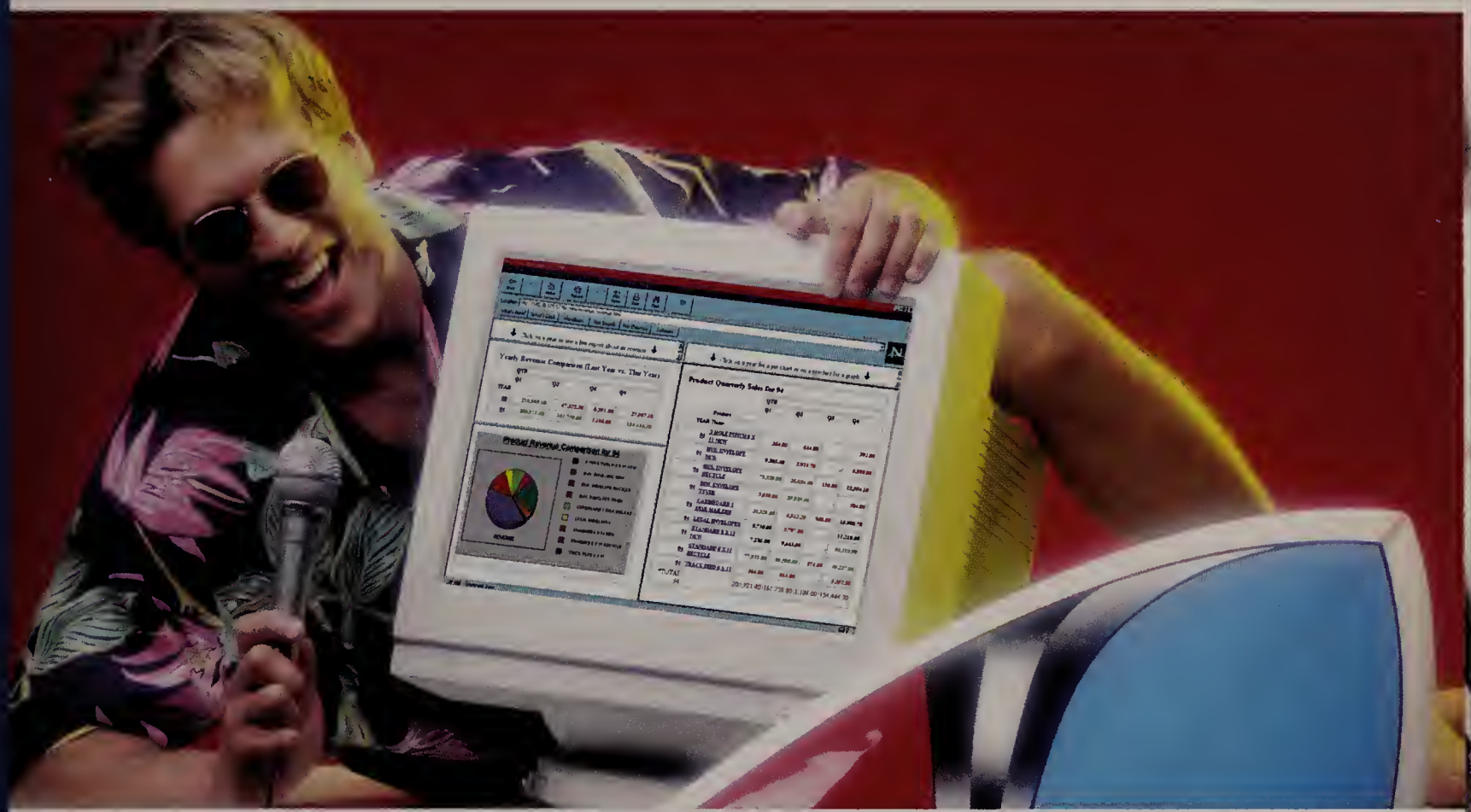

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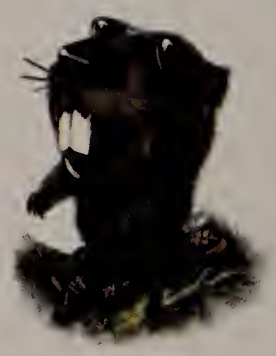

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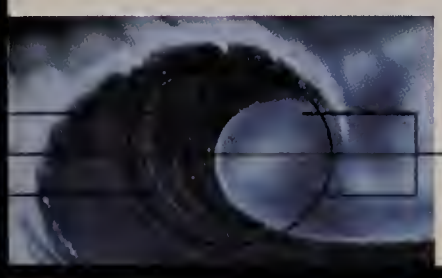

POWER is a Beautiful Thing

CURRENT ISSUE

>> p + s + v = ci

WEBMASTER'S "WHAT *is* A WEBMASTER?" SWEEPSTAKES

ROUND 1

GRAND PRIZE:

An all expense-paid trip to the destination of your choice*

So, you think you know what a webmaster does? Prove it. Use the attached ENTRY FORM to list three "webmasters" who were featured in the February, March and April issues of WebMaster Magazine — ONE from February, ONE from March AND ONE from April. After you receive the April issue of WebMaster, mail back the completed ENTRY FORM. If the ENTRY FORM has been removed, please contact Karen Fogerty at fogerty@cio.com or your regional sales representative and we'll send one right out to you.

Hint 1:
Webmasters don't necessarily have the title "webmaster."

Hint 2:
Anyone featured in the issue probably functions as a "webmaster."

Hint 3:
Cheating allowed! You can call your regional sales rep or Karen Fogerty at 508-935-4091 if you want to insure you're providing the right answers.

Happy hunting!

*The prize is a $4,500 travel voucher from American Express Travel that can be applied to any worldwide destination of your choice.

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"WebMaster Online is daily reading. The Intranet Resource Center, the Professional Webmaster discussion forum and the additional articles, resources and online seminars are a real educational experience."

- Patty Clifford, Chief Operating Officer, AO/Net

"WHAT *is* A WEBMASTER?"

SWEEPSTAKES ENTRY FORM

FOR FEBRUARY • MARCH • APRIL

Read through the articles in WebMaster Magazine and list three "webmasters" who were featured in the February, March and April issues of WebMaster Magazine — ONE from February, ONE from March AND ONE from April. After you receive the April issue of WebMaster, mail back the completed ENTRY FORM. Keep in mind that webmasters don't necessarily have the title "webmaster." If you need a little help, feel free to contact your WebMaster regional sales representative — they're very knowledgable about reaching your target audience!

1. February Webmaster

Name _____

Title _____

Organization _____

2. March Webmaster

Name _____

Title _____

Organization _____

3. April Webmaster

Name _____

Title _____

Organization _____

Your Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____

Email _____

URL _____

WEBMASTER'S "WHAT *is* A WEBMASTER?" SWEEPSTAKES

Official Rules • No Purchase Necessary To Enter or Win • All Prizes Guaranteed to be Awarded

1. On an official entry form, hand print your name, title, company name, company address, and business phone number and list three "webmasters," their titles and organization that appear in the February, March and April issues of WebMaster Magazine. You may obtain a free copy of the magazine and an otflcial entry form with rules either by writing to: CIO Communications, Inc., 492 Old Connecticut Path, P.O. Box 9208, Framingham, MA 01701-9208 or by calling (508) 935-4091 or emailing fogerty@cio.com. Only one copy of each issue per individual or household is allowed. Sweepstakes begins 1/1/97.
2. Each entry must be mailed to: WebMaster Sweepstakes, 492 Old Connecticut Path, P.O. Box 9208, Framingham, MA 01701-9208. Mechanically reproduced entries or magazine requests will not be accepted. All entries for the February/March/April Sweepstakes must be received by May 1, 1997. Only entries arriving by US First Class Mail are eligible. CIO Communciations is not responsible for postal delays, losses or damages, or for printing or other errors. All entries and requests become the property of CIO Communicaitons and will not be returned.
3. There will be a drawing on May 7, 1997 tor the February/March/April Sweepstakes. One Grand Prize consists ot a $5,000 Travel Voucher from Thomas Cook Travel. Travel must be completed by August 31, 1998.
4. Winners of the February/March/April Sweepstakes drawing will be selected, from among correctly answered entries, in a random drawing. Odds of winning are dependent upon the number of correct entries received. The winner will be notified by mail immediately following the drawing. Prizes are non-transferable and no substitutions or cash equivalents are allowed.
5. All entrants must release CIO Communications, Inc., and its parent company, aftiliates, subsidiaries, advertising agencies, promotion agencies and all others associated with the development and execution of this sweepstakes from any and all liability for damages, losses or injury resulting from acceptance of any prize. Sponsor reserves the right to substitute a prize of equal or greater value. All federal, state and local taxes, gratuities, insurance, travel documentation, incidentals and expenses not specifically stated in the prize description, are the sole responsibility of the individual winners. Winners will be required to verify address and execute an affidavit of eligibility and liability release within 14 days of notification attempt. Failure to execute any requested documents within such 14 day period will result in forfeiture of prize and an alternate winner will be selected. Travel companions of trip winners must be over 18 years ot age and will be required to provide proof of age and execute a liability release. No responsibility is assumed for lost, misdirected, illegible, mutilated, postage due or late entries by mail. Entry (and acceptance of prize) constitutes permission to use winner's name and likeness for publicity and advertising purposes without further compensation. Trips subject to availability and confirmation of reservations must be made by August 1, 1998. Certain travel restrictions and seasonal limitations may apply.
6. Sweepstakes open only to advertising agency and corporate personnel who are responsible for the purchase of magazine advertising space who are residents in and of the continental U.S. and 18 years of age or older as of 2/1/97. Employees and their tamilies of CIO Communications, Inc., its parent company, affiliates, subsidiarles, advertising and promotion agencies are ineligible. This offer is void where prohibited or restricted by law, and subject to all federal, state and local laws and regulations.
7. For the name ot the winners, send a stamped, self-addressed envelope to: CIO Communications, Inc., 492 Old Connecticut Path, What Is A Webmaster Sweepstakes, P.O. Box 9208, Framingham, MA 01701-9208 by July 1, 1997. Washington residents need not affix return postage.

WebMaster 1997 Editorial Calendar

Issue Date	Advertising Closing Date	Features	Bonus Distribution
Jan	December 9	• Application Development on the Web • Intranet Profile • Distributed Authoring	ComNet, Feb 4 - 6 Internet Expo, Feb 18 - 20
Feb	January 13	• Department of (Electronic) Commerce: The Utilities Industry • Approaches to Web Site Management • Designing Your Intraface	Spring Internet World, March 11 - 14
Mar	February 7	• Field Report: Authentication • The Region Wide Web • Customer Self-Service	CIO Perspectives, March 23 - 26 ICE, April 9 - 11
Apr	March 12	• Function Keys: Engineering • Web ROI • Security Tradeoffs	Networld/Interop, May 6 - 8
May	April 11	• Integrating Your Internet and intranet • The Mobile Mosaic • Making Outsourcing Succeed	WebMaster Perspectives, May 18 - 21 PC Expo, June 16 - 19
June	May 12	• Field Report: Data Mining • Collaboration on the Web • Intranet Profile	
July (Harvey Study Issue)	June 11	• Special Issue: The Web Infrastructure • Integrating Web and Legacy Systems • Planning the Future Web • The Human Infrastructure	Internet Expo, August 13 - 14
Aug	July 15	• Special Issue: The WebMaster 50/50: Defining Web-Enabled Business Excellence • 50 World-Class intranet Sites • 50 World-Class Internet Sites	ICE, September 9 - 11
Sept	August 11	• Schooling on the Internet • The Database Derby • Managing Employee Web Use	Networld/Interop, October 8 - 10 CIO Perspectives, October 13 - 15
Oct	September 11	• The New Librarians • EDI Update • Leveraging Communities for Business	
Nov	October 10	• Health Care Goes Online • Intranet Profile • Function Keys: Sales Support	WebMaster Perspectives, December 7 - 10
Dec (Harvey Study Issue)	November 11	• Five Uneasy Pieces: The Web Debunked • Department of (Electronic) Commerce: Financial Services • Field Report: Telephony	

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WEBMASTER

$4.95

January 1997

If you think a "webmaster" is a just-out-of college, HTML hacker, who writes code ALL day...

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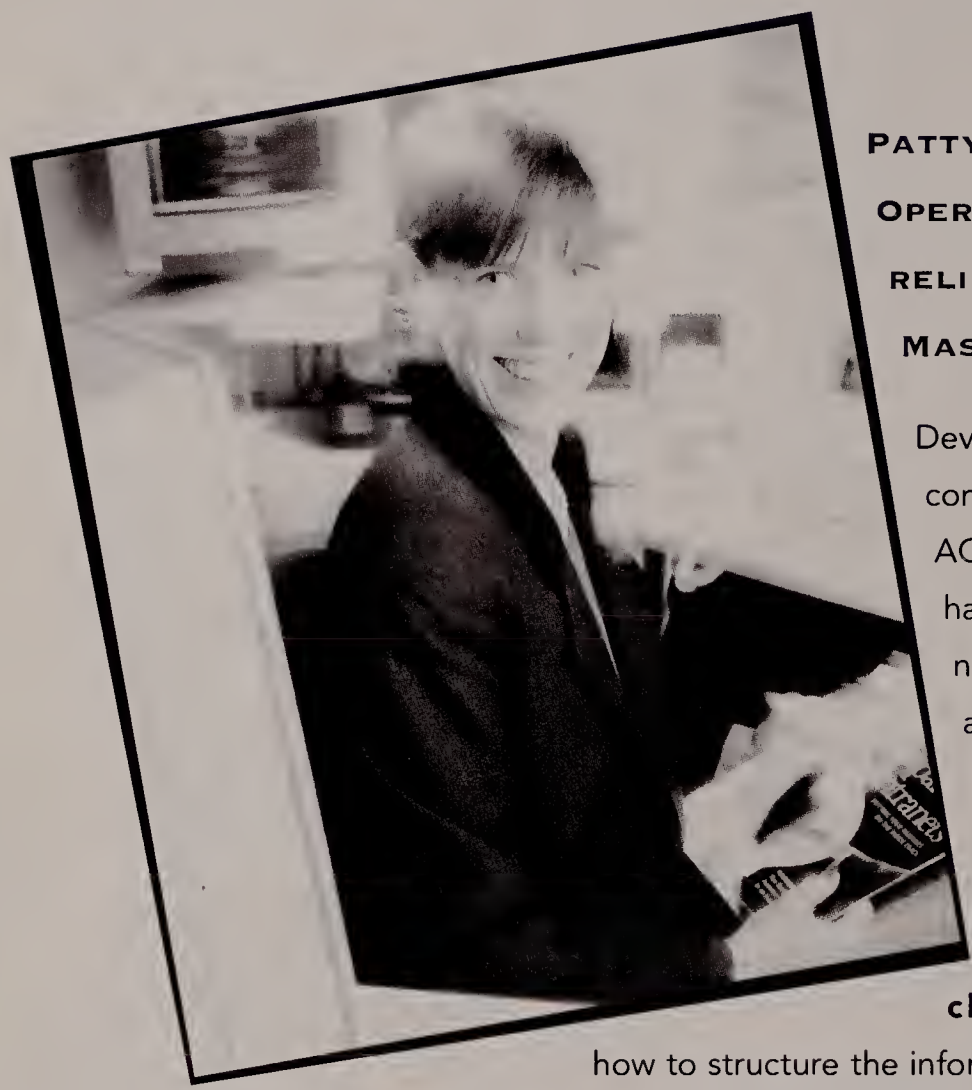
Some Webmasters are CHIEF OPERATING OFFICERS

"I have trouble sharing my copy of WebMaster. I like to keep my issues at arms length."



Patty Clifford, Chief Operating Officer of AO/Net, relies on WebMaster to Master the Web.

Developing intranets for Fortune 500 companies keep the webmasters at AO/Net Universal very busy. Patty has got her hands full **managing** not only AO/Net's webmasters and Web site, but overseeing the **strategic direction of her clients' intranet** and Web site initiatives.

Topping her list of **daily challenges** is advising clients on how to structure the information on their intranets. With a commitment to customer satisfaction, Patty counsels her clients on design, content, budgeting and hardware and software purchases.

"Because of intranet confidentiality, it's difficult to show examples of exemplary sites to clients. The information covered in WebMaster, both the magazine and online, allows me to show clients the best of the best and explain why. Furthermore, companies are continually experimenting with new ideas and implementing innovative technologies. **I need to be current on what other companies are up to**; my clients depend on it."

"Nearly every article helps me do my job better. I read WebMaster from cover to cover."

"My WebMaster issues are so dogearred and marked up. I refer to them constantly."

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The webmaster function is represented by all areas of the enterprise. Although they might not hold the actual title "webmaster," these influential executives are involved in Web development, Internet and intranet product purchasing, and Web business strategy. Only one magazine addresses their needs: WebMaster.

To find out more about WebMaster Magazine and the audience it reaches, contact Mike Masters at (201) 244-5510 or masters@cio.com for a WebMaster Media Kit.